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SERVICE MANUAL
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2830

DYNASCAN CORPORATION
2815 WEST IRVING PARK ROAD
CHICAGO, ILLINOIS 60618

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MODEL 2830
SERVICE MANUAL

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FOR USEFUL INFORMATION REFER TO:

1.	2830 INSTRUCTION MANUAL	480-238-9-001
2.	2830 COMPOSITE (SCHEMATIC AND PARTS LIST)	499-144-9-001
3.	BP-30 INSTRUCTION FOLDER	481-095-9-001

1. POWER SUPPLY (FIG. 1)

The power supply generates three DC Voltages with respect to ground, +12V, -4V and V display. Note that there is a different symbol for a "low current ground" which is a separate conductor carrying very small current (10nA max.) to pin 1 of IC2. The transformer secondary voltages are rectified, filtered, then controlled by Q1. The +12V is regulated by IC1A which is ½ of the quad op-amp 324. IC1A compares the reference voltage from high-stability zener diode D5 to a fraction of the 12V and keeps the two equal by adjusting V display. The 12V is the most tightly regulated of the supply voltages and results in a constant current (0.5mA) to reference diode D5.

Negative supply, -4V is more loosely controlled by zener diode D6 which operates near a relatively "soft" $I/_V$ curve knee. Thus the negative supply voltage shifts depending on the current through it, which is the current through devices connected to ground, such as D5, IC5, and IC7. When switched to ohms, IC5 becomes active so its supply current increases and -4V becomes about 0.4V more negative. The 12V supply is connected to IC7 only in the 10 ohms range, while supply to IC5 is removed for the purpose of saving battery current if the optional battery pack is used.

One end of D7 is connected to the circuit through jumper L2, so that for battery operation D7 is disconnected and wastes no power. In that case the voltage between +12V to V display is regulated by the battery rather than by D7. The 43Ω resistor R1 is also connected through jumper L1; for battery operation L1 is disconnected.

Note when the unit is "OFF" and still plugged in, the transformer is always "hot" and filter capacitors C1 and C3 are charged. This is for the purpose of battery charging.

2. ANALOG-to-DIGITAL CONVERTER (Fig 2)

The heart of the meter is the dual-slope integrator and control circuits in IC2, the 24-pin chip. Input voltages are ultimately passed through R30 to pin 3 which leads to a very high impedance (approximately 1000MΩ) buffer then to the auto-zero circuit and the integrator. The voltage on pin 3 is compared to that on pin 2, both taken with respect to pin 1, and the ratio times 2000 is the displayed result. For example, 0.25V on pin 3 while 2V are on pin 2 should read $\frac{.25}{2.0}$ x2000=250. For the auto-zero function to work properly, pin 1 must be at exactly the same voltage (within 50μV) as the low end of the sense path, which is at pin 6 of input divider RN-1 for voltages and at shunts R24, R41 for currents.

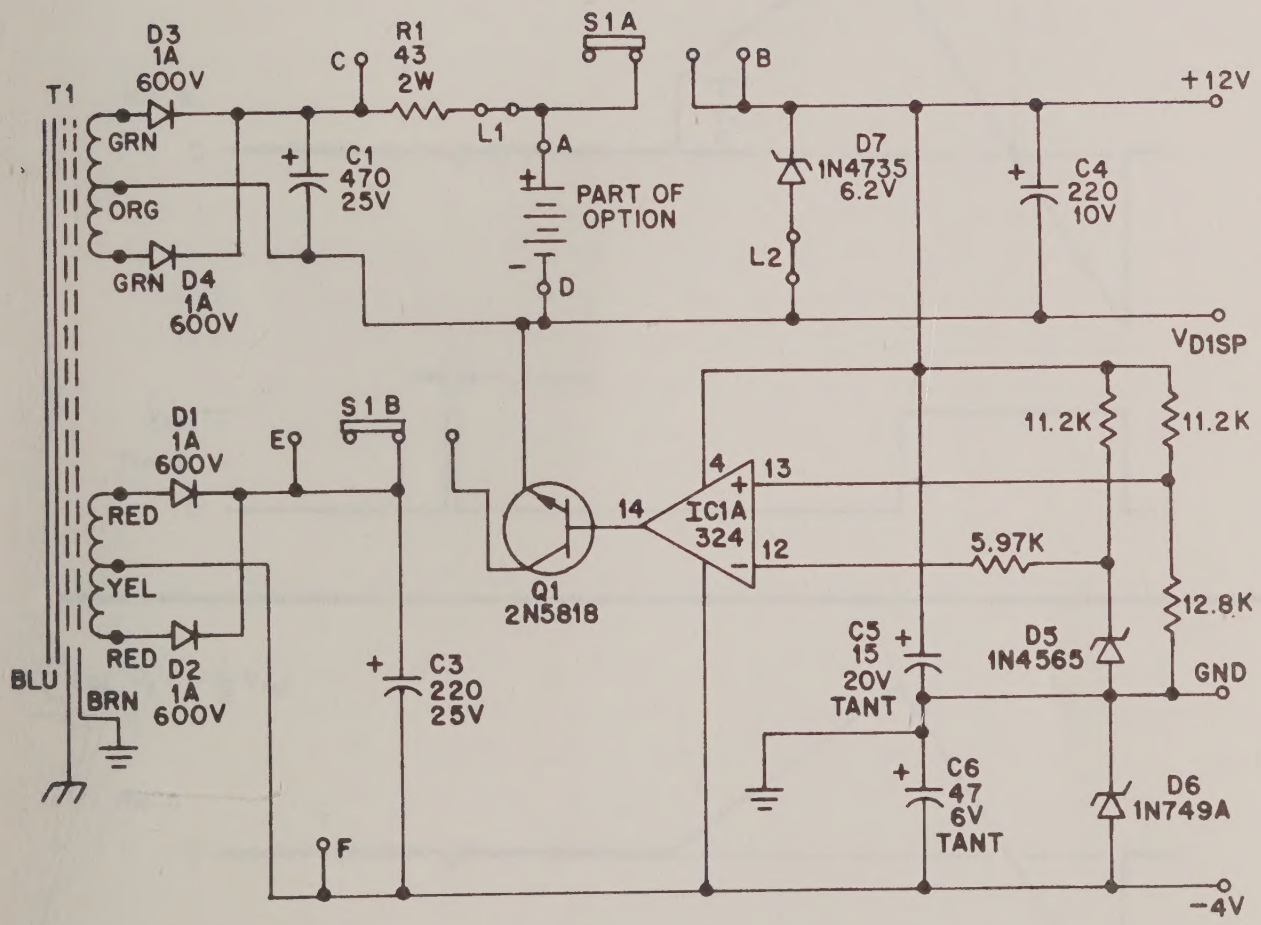
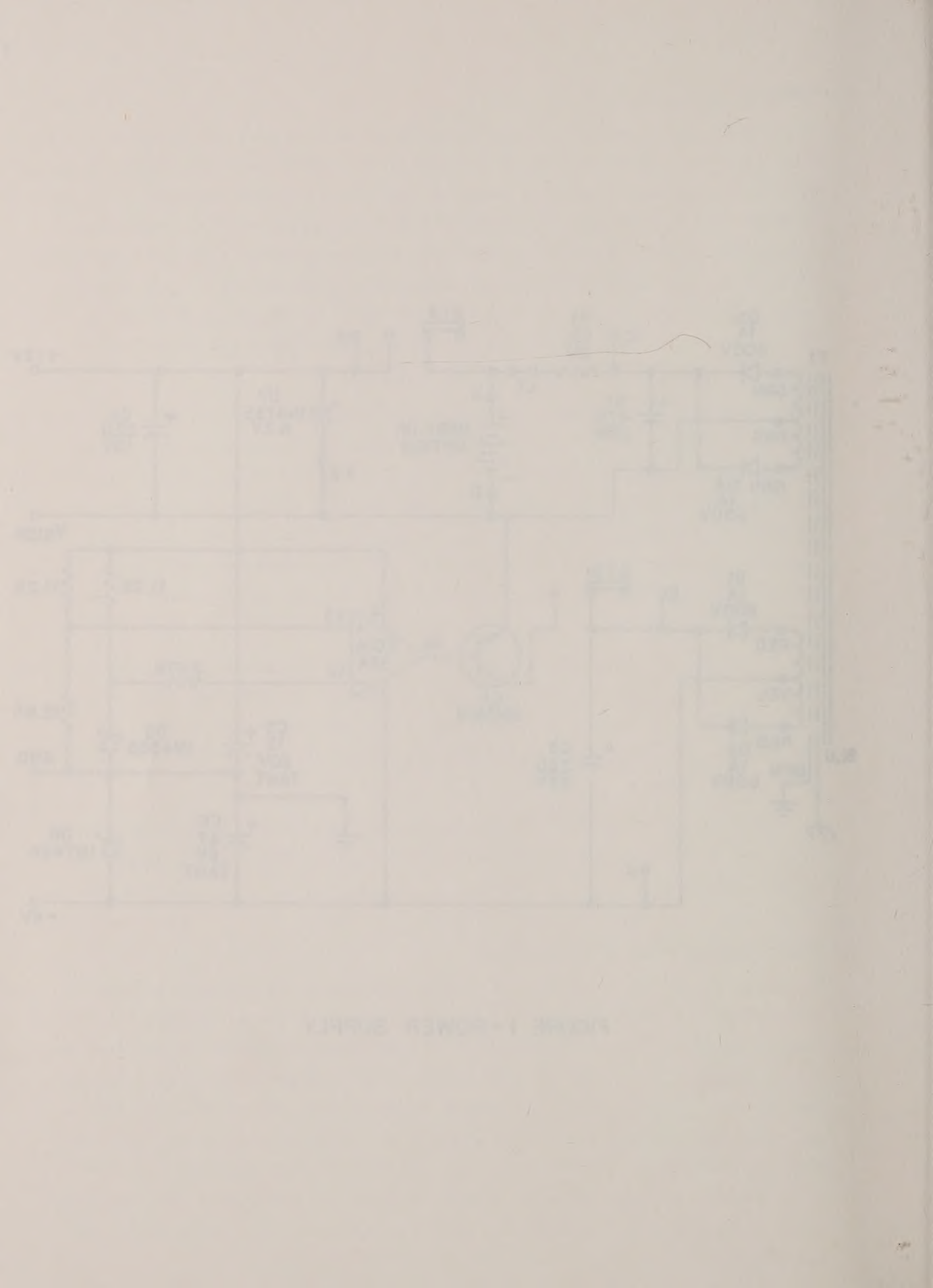


FIGURE 1 - POWER SUPPLY



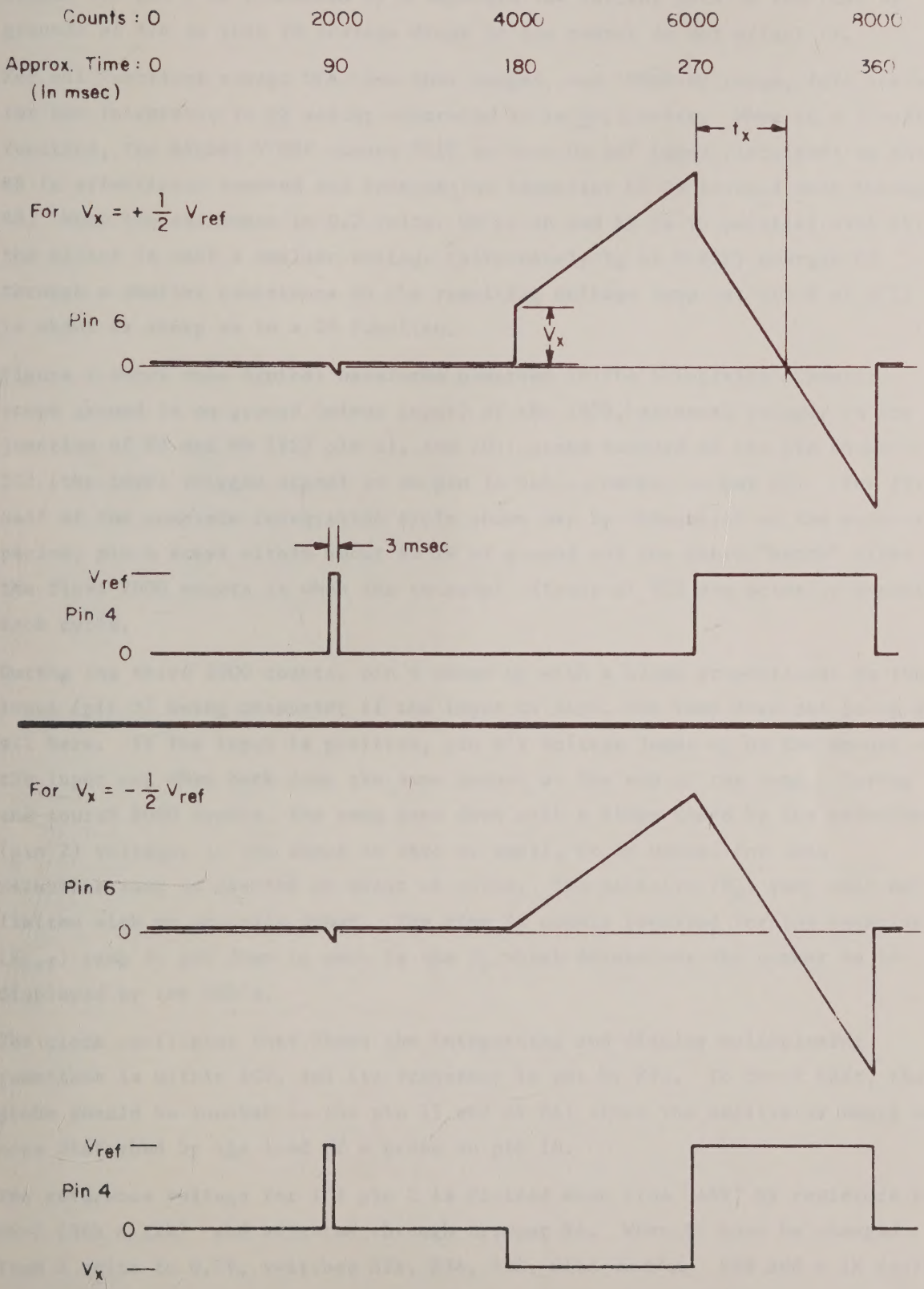
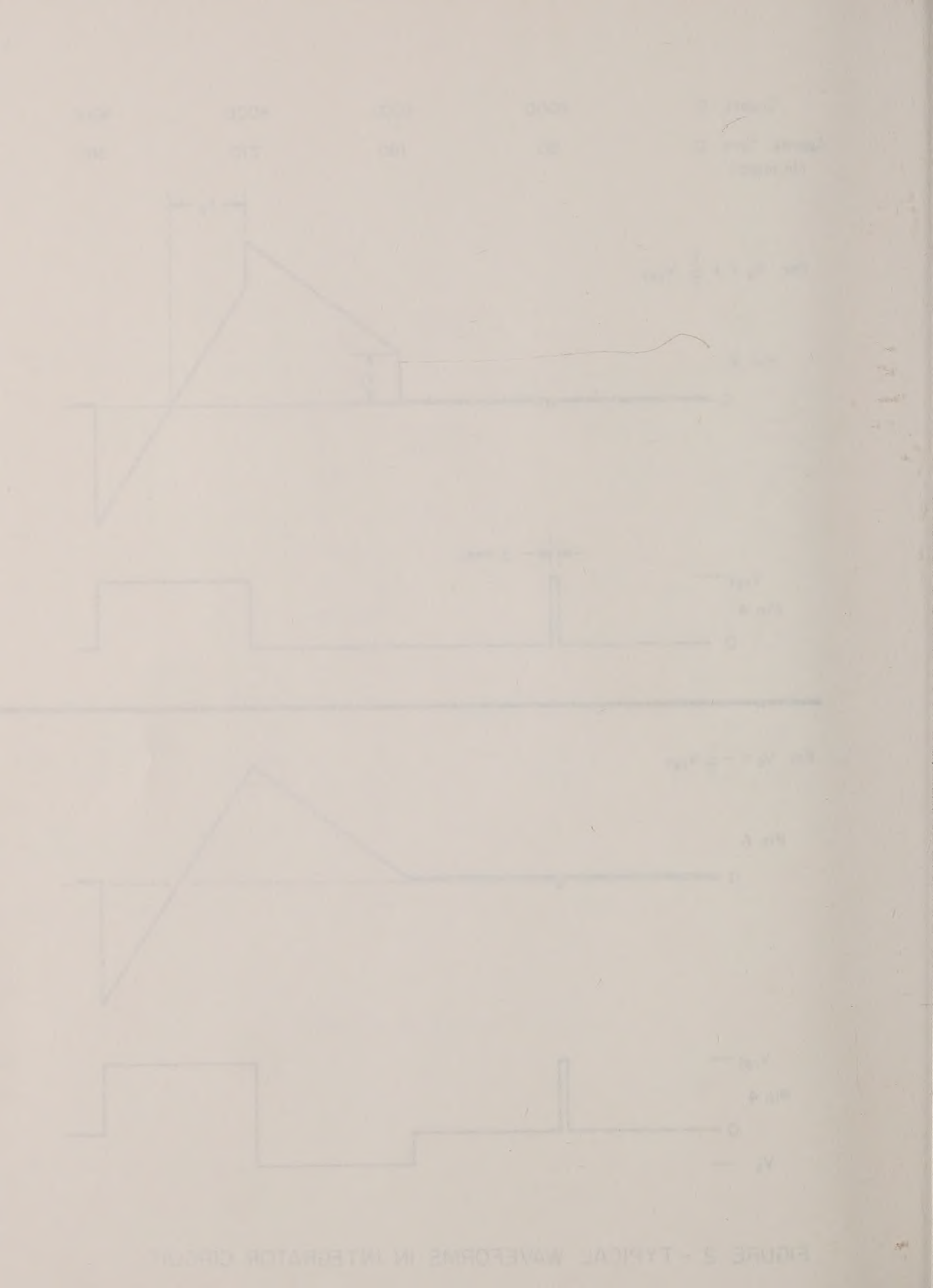


FIGURE 2 - TYPICAL WAVEFORMS IN INTEGRATOR CIRCUIT



Ground for pin 1 is connected by a separate low current path to the rest of grounds at R24 so that IR voltage drops in the copper do not affect it.

For all functions except DCA, low ohms ranges, and 100mV DC range, full scale for the integrator is ± 2 volts; otherwise it is ± 0.2 volts. When in a 2 volt function, the higher V REF causes IC1C to turn Q4 off (open circuited) so that R8 is effectively removed and integration capacitor C9 is charged only through R9. When the reference is 0.2 volts, Q4 is on and R8 is in parallel with R9; the effect is that a smaller voltage (alternately V_X or V REF) charges C9 through a smaller resistance so the resulting voltage ramp (at pin 6 of IC2) is about as steep as in a 2V function.

Figure 2 shows some typical waveforms observed in the integrator circuit; scope ground is on ground (minus input) of the 2830, external trigger on the junction of R8 and R9 (IC2 pin 4), and 10:1 probe touched to the pin shown on IC2 (the ideal trigger signal is on pin 14 but is harder to get at). The first half of the complete integration cycle shown may be thought of as the auto-zero period; pin 6 stays within about 60 mV of ground and the short "notch" after the first 2000 counts is when the internal offsets of IC2 are actually measured each cycle.

During the third 2000 counts, pin 6 ramps up with a slope proportional to the input (pin 3) being measured; if the input is zero, the ramp does not go up at all here. If the input is positive, pin 6's voltage jumps up by the amount of the input and then back down the same amount at the end of the ramp. During the fourth 2000 counts, the ramp goes down with a slope fixed by the reference (pin 2) voltage; if the input is zero or small, it is normal for this reference ramp to flatten at about -4 volts. The positive (V_X) ramp must not flatten with an on-scale input. The time in counts required for the negative (V_{ref}) ramp to get down to zero is the t_x which determines the number to be displayed by the LED's.

The clock oscillator that times the integrating and display multiplexing functions is within IC2, and its frequency is set by R11. To check that, the probe should be touched to the pin 11 end of R11 since the oscillator would be more disturbed by the load of a probe on pin 10.

The reference voltage for IC2 pin 2 is divided down from "+8V" by resistors in RN-2 (36k & 12k) and adjusted through trimpot R4. When it must be changed from 2 volts to 0.2V, switches S2B, S3A, S9C, S11A and/or S8B add a 1K resistor across 12K to ground.

3. DISPLAY

IC2 translates the number of counts corresponding to the t_x from its integrator stage into the time-multiplexed signals needed to drive BCD-to-7-segment decoder IC3 and digit drivers IC4. For example, for ½ (about 0.4 msec.) of the display cycle, the input of one driver (pin 8 of IC4D) is pulled high to make its output (pin 10) low which turns on the common-cathode display DS-4; at the same time IC2 puts the appropriate BCD code for that digit (the least significant digit) on its pins 20-23, with a high there meaning that bit is on. Note that "high" and "low" for the display circuits mean the +12V and $V_{Display}$ levels.

When the meter is given an overrange input, i.e. the voltage on pin 3 of IC2 is greater than that on pin2, pin 15 goes low which turns on the IclD oscillator circuit which in turn pulses the blanking input of IC3, so that all 4 displays are flashed on and off. D8 keeps that blanking input (pin 4 of IC3) from being pulled much below the "low" level.

Q3 switches current to the "minus" sign segment anode and switches S3B, S4A, S6B, and S7A provide current through Q9, Q10, and Q11 to the proper decimal point anode.

4. VOLTAGE ATTENUATOR and FREQUENCY COMPENSATION

Voltage inputs always see 10MΩ (±10%) as they are applied across the divider RN-1, through S14C and/or S13A. That resistor network is ratio-trimmed so that its smaller resistors are each decade fractions of its 9MΩ resistor. In the ACV function, DC-blocking capacitor C18 is put in series with the input. Compensation capacitor C20 is on the 100V range tap of the divider, and C21 is on the 10V range. If C20 or C21 were bad or missing, that would show up most on the 10V, 100V and 1000V ranges. On the other ranges, frequency response depends mainly on IC6 and its C16.

Overload protection is provided for the voltage ranges by metal-oxide varistors VR1, VR2, and VR3 connected across the input. At high energy transients, the varistor impedance changes from a very high standby value to a very low value, thus clamping the transients voltage to a safe value and protecting the instrument components. Long-sustained over voltage may destroy the varistors. They are designed to fail as short circuits. A 1/16 A, 250V, 3AG fuse (F2) is incorporated in the voltage input jack; this fuse normally opens before any damage to the instrument.

5. AC-to-DC CONVERTER (Fig 3)

When set to ACV, signals are routed from the selected tap of RN-1 to the level-shifting buffer Q8. That JFET passes on AC voltages just as they arrive at its gate except that its output (called "D" on the PCB legend) is centered at about 3 volts DC instead of zero. That DC shift is needed to let IC6 drive the rectification circuit without clipping pin 6's negative peak for large input amplitudes. When scoping this circuit, R37 (i.e. the Drain of Q8) is often a good place to look first. This low-impedance point is not affected much by the load of the probe; the gate of Q8 is a sensitive high-impedance point protected by R38 and D9.

D13 and D14 rectify the AC voltage signal, then pot R33 and two ratio-trimmed resistors in RN-3 (414 and 3766 ohms) form a voltage divider which feeds back a fraction of the level-shifted voltage (centered about the DC voltage which is fed to R30) from D14 through coupling capacitor C17 to the inverting input of IC6. Only the AC component is fed back by C17, while R36 closes the DC loop for IC6. When set to ACA, the voltage gain of the stage is changed from 1 to 10 by shorting out the 3766 ohm resistor so that less of the output is fed back to the op amp's pin 2 (so output must swing ten times as much to keep inputs equal). Because the DC result on D14's cathode has so much AC on it, it is filtered by R34 and C12 before going through the other R-C filter (R30 and C7) to IC2.

6. OHMS CONVERTER (Fig. 4)

For resistance measurements, a constant current is generated through the unknown (R_x) and the resultant voltage is applied to IC2 through R30. In Fig. (4) HI Ohms range selection is shown. In the low ohms ranges, the current generated is the same as in the next high ohms range but V_{ref} is switched to 0.2V so that only 0.1999 volts across R_x produces a full-scale reading.

The current is generated by dropping 1.0 volt through the selected part of RN-1. IC5 controls Q7, which acts like a variable resistor, to keep its two inputs equal; since its input current is very small and the gate junction of Q7 is reverse-biased, virtually all the current from RN-1 goes through D10 and R_x to ground.

Note that in the 10MΩ and 1000K LOΩ range only 100nA (1V across 10MΩ) is being passed through RN-1 and Q7 etc, so that a slight leakage (such as through a film or flux or a bad IC5 input) which did not show up on the lower ranges could badly affect these two ranges.

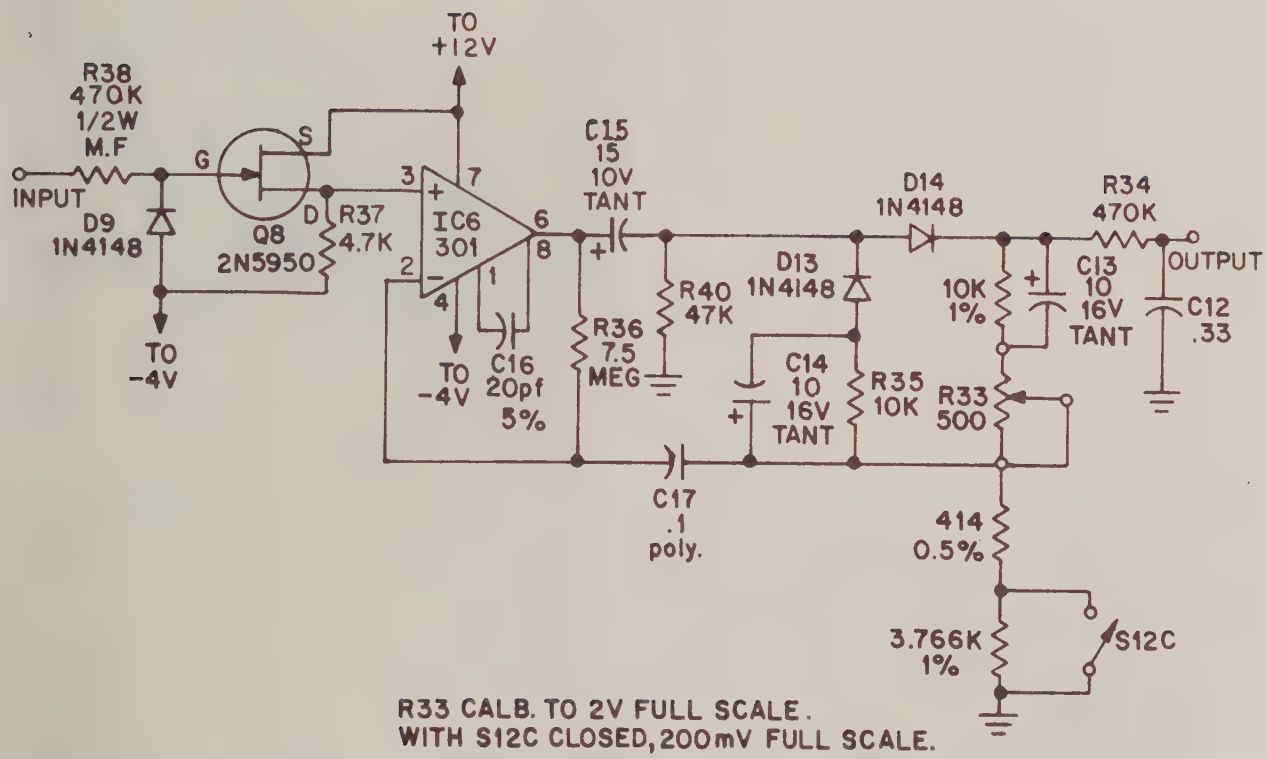


FIGURE 3 – AC TO DC CONVERTER

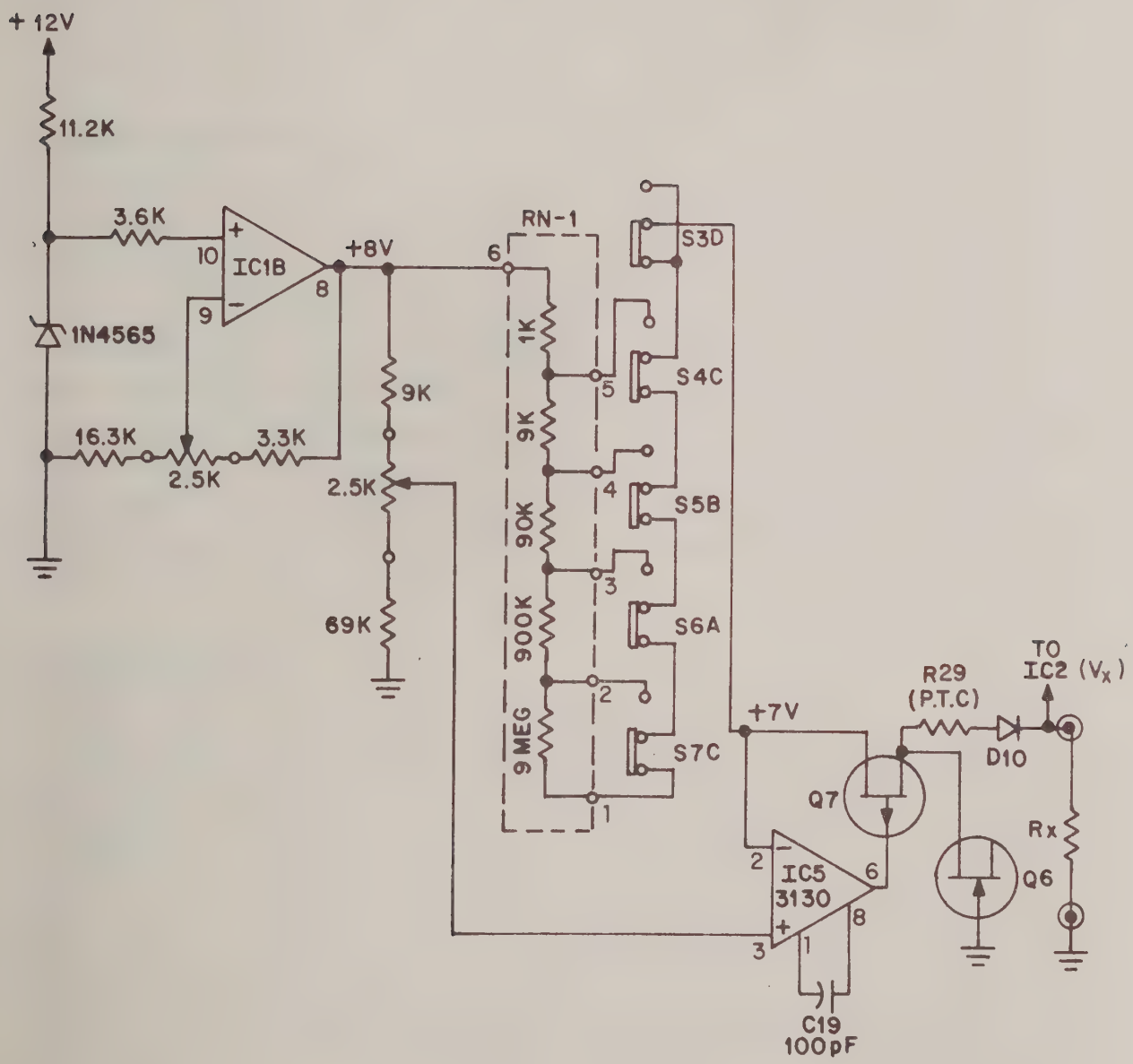


FIGURE 4 - OHMS CONVERTER

The ohms circuit protection depends basically on 1kV-rated D10, which blocks positive voltages accidentally applied to the meter input, and on R29. In normal use R29 has a resistance of about 2KΩ (±20%), but if a negative or AC voltage source is applied, then the current drawn through R29 heats it very fast and its resistance increases enormously (Positive Temperature Coefficient). A 2A, 250V, 3AG fuse (F1) is in series with the Ω & A input, protecting the ohms and current ranges.

7. 10 OHMS CONVERTER (FIG. 5)

The circuit shown (simplified) generates a constant 10mA through the resistor being measured by maintaining a voltage (adjusted by R44) of about 6.84V across the 684Ω resistor R42. If the resulting voltage at the meter's (+) terminal were sent to IC2, we'd see a measurement of R_X plus the resistance of the fuse, switch, test leads, etc. The same effect is present on all ohms ranges, but with so much current the problem is magnified. IC2is instead connected to the wiper of the 10Ω ZERO adjustment, R2, which is set to be below the (+) terminal voltage by the same amount as the voltage across the fuse and test leads etc. (about 3mV). The zero adjustment has no effect in other ranges or functions. For the 10 ohms range protection, a pair of clamping diodes (D15 and D16) is used across the input.

8. CURRENT MEASUREMENTS

In the AC and DC current functions, the input is switched through a 1K, 100, 10, 1, 0.1 or 0.01Ω shunt to ground and the voltage developed is sensed at the high end of R28 (for 10A range, sensed at R41). In DCA, that voltage goes directly to the A-to-D converter (IC2) in its 0.2V full scale mode. In ACA, the voltage goes first to Q8 and the AC circuit which now has a gain of 10 (instead of 1 as in ACV); its output goes to the A-to-D converter in its 2V full scale mode. If a pure DC current is passed through the meter when set to ACA, it should read zero due to the coupling capacitors (C15 and C17) in the AC circuit. Protection diodes D11 and D12 limit the voltage that may be developed across meter input.

In addition to the 2A, 3AG fuse in the current jack, a 1000V, 2A fuse is in series with the input which protects against high energy on the current ranges (except the 10A range).

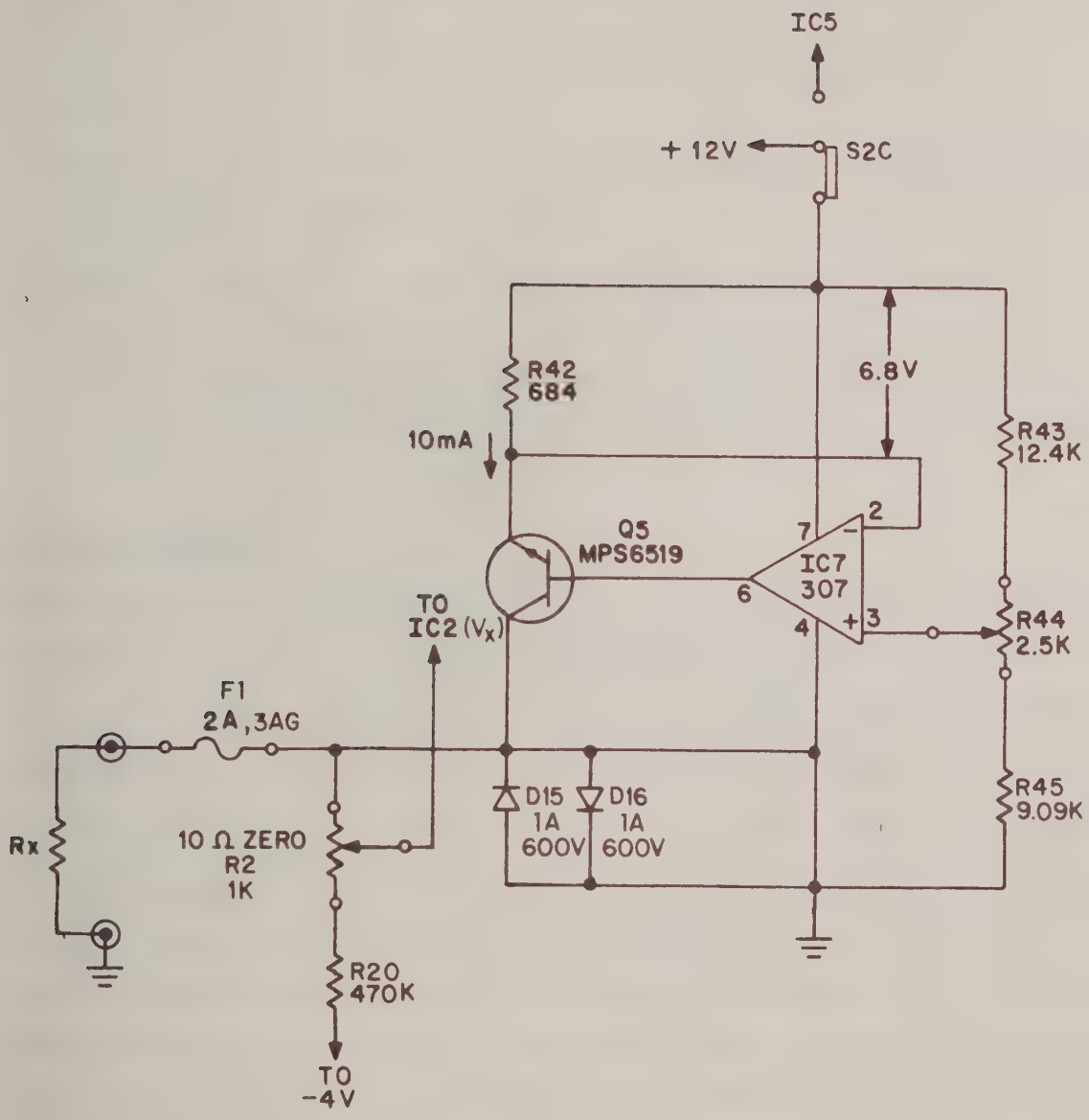


FIGURE 5 – 10 OHMS CONVERTER

9. CALIBRATION (FIG. 6)

The sources used in calibration should have an accuracy of 0.1% or better, and the AC signal must be a pure sine wave. The procedure below must be followed in order given, and is the same as the procedure in the customer manual.

a) Set unit to DCV 1V range.
b) Apply +1.9 volts to input and adjust R4 for a reading of 1.900.
c) Set unit to ACV.
d) Apply 1.9 volts RMS sine wave (any frequency between 50 and 400 Hz) and adjust R33 for a reading of 1.900.
e) Set unit to HI OHMS.
f) Connect 1.9KΩ ±0.1% to input and adjust R32 for a reading of 1.900.
g) Set unit to 10Ω range.
h) Short the input leads and adjust 10Ω zero control for a zero reading.
i) Remove short and connect 19Ω ±0.1% to input and adjust R44 for a reading of 19.00.

10. BATTERY PACK BP-30

The battery voltage is chopped into a square wave oscillation (10V peak-peak, centered at +7V, for a 5V battery) by the switching transformer and Q201 & Q202. The frequency is approximately 20KHz. If a much lower frequency is observed, or if the battery current is exceptionally high (with 0.00DCV displayed and a 5V battery voltage, 120 to 140mA is about normal, 200mA would be high), one of the two transistors may be bad (neither should be obviously warm; if one is, suspect that one). If both a scope and a power supply (in place of a battery) are to be used for checking this circuit, supply negative must be isolated from scope ground. The transformer secondary output is rectified and connected across filter capacitor C3 through the BP-30 connector.

Diodes D205, D206, and D207, when connected to decimal switching transistors Q9, Q10 and Q11, will turn on 3 decimal points simultaneously if batteries require recharging. At approximately 4.2V of battery voltage, the voltage at E (Q1 collector) drops to 10.2V. At this value, the three points P forward bias Q9, Q10, and Q11.

The batteries are charged through the diode D201 and the charging current is controlled by two lamps in parallel (I201 & I202). The charging current is approximately 90mA. While battery charging both lamps should be on. If one lamp fails, the charging current drops to half, resulting in twice the battery charging time.

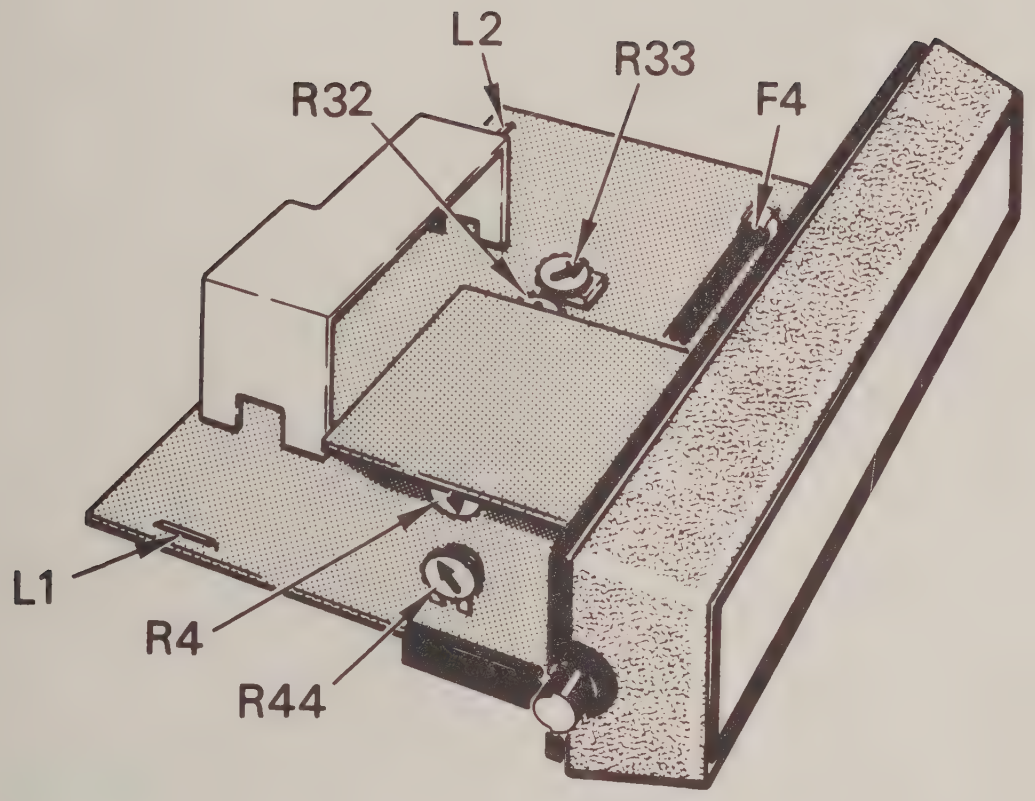
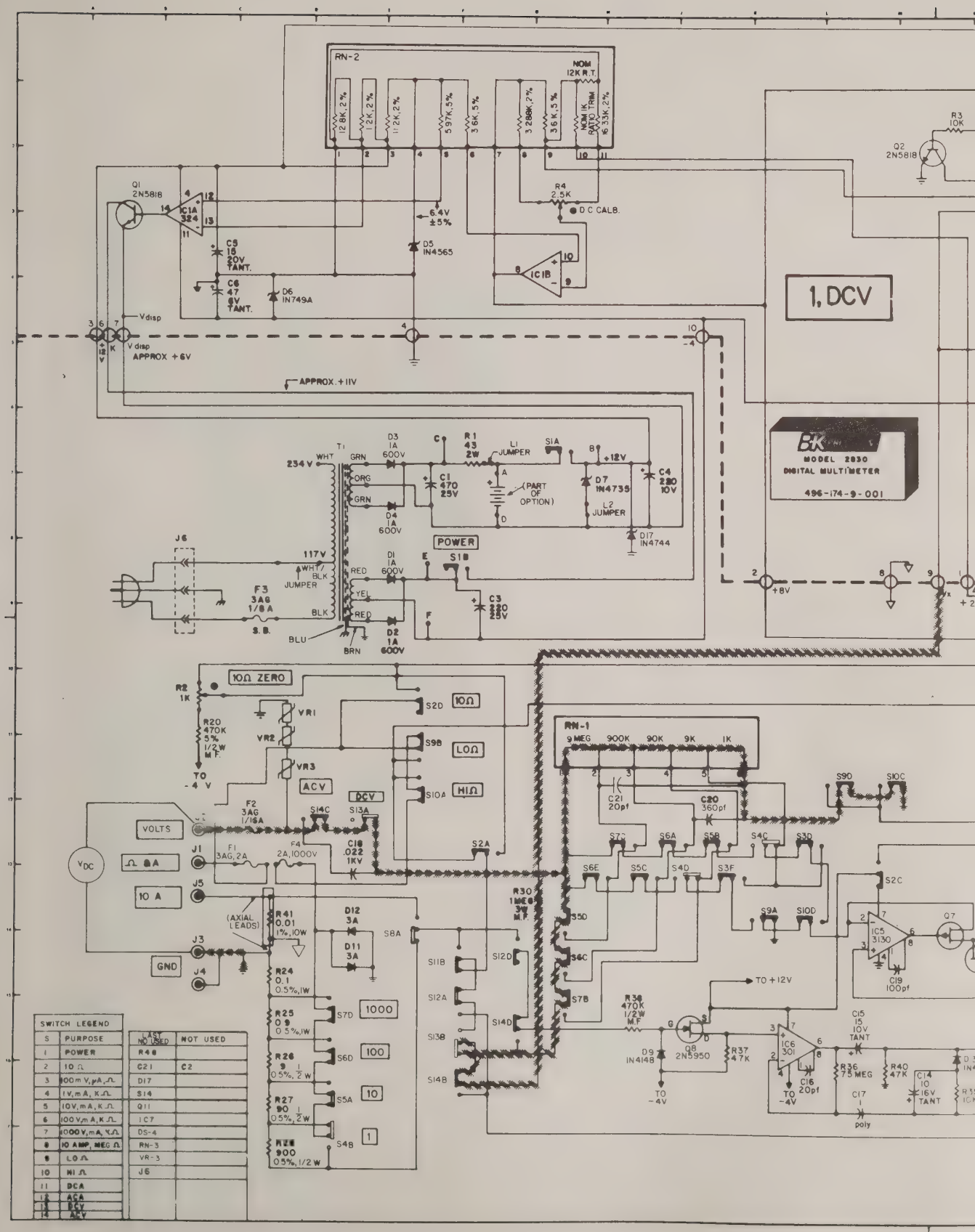
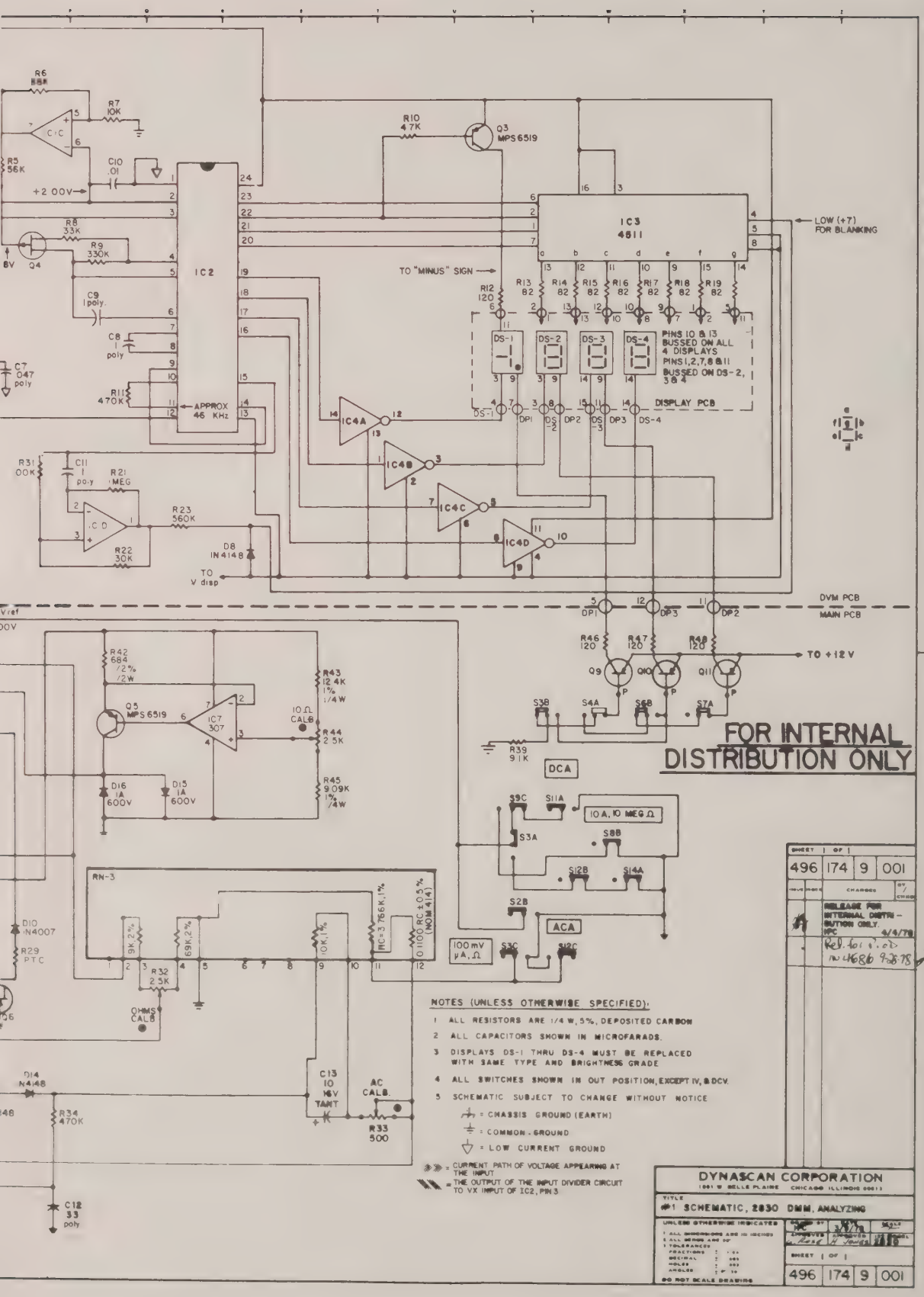


FIGURE 6 – LOCATION OF INTERNAL ADJUSTMENTS


RN-2
NOM 12K R.T.
128K, 2%
12K, 2%
1.2K, 2%
597K, 5%
36K, 5%
328K, 2%
36K, 5%
NOM 1K RATIO TRIM
16.33K, 2%
R3 10K
Q2 2N5818
Q1 2N5818
IC1A 324
IC1B
R4 2.5K
D.C CALB.
6.4V ±5%
D5 IN4565
C5 15 20V TANT.
C6 47 6V TANT.
D6 IN749A
Vdisp
V disp APPROX +6V
APPROX. +11V
1, DCV
B+K PRECISION
MODEL 2830
DIGITAL MULTIMETER
496-174-9-001
T1
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
C1 470 25V
R1 43 2W
L1 JUMPER
S1A
(PART OF OPTION)
D7 IN4735
L2 JUMPER
D17 IN4744
C4 220 10V
+12V
+8V
J6
117V
WHT/BLK JUMPER
BLK
F3 3AG 1/8A
S.B.
BLU
BRN
D1 1A 600V
D2 1A 600V
RED
YEL
RED
POWER
S1B
C3 220 25V
10Ω ZERO
R2 1K
R20 470K 5% 1/2W M.F.
TO -4 V
VR1
VR2
VR3
ACV
DCV
S2D 10Ω
S9B LOΩ
S10A HIΩ
S14C
S13A
F2 3AG 1/16A
VOLTS
J1
F1 3AG, 2A
F4 2A, 1000V
C18 .022 1KV
S2A
VDC
Ω @A
10 A
J5
J3
GND
J4
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 1/2W
R27 90 0.5%, 2W
R28 900 0.5%, 1/2W
S7D 1000
S6D 100
S5A 10
S4B 1
S11B
S12A
S13B
S14B
S12D
S14D
R30 1MEG 3% M.F.
S5D
S4C
S7B
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S2C
S9A
S10D
IC5 3130
C19 100pf
Q7
TO +12V
R38 470K 1/2W M.F.
D9 IN4148
Q8 2N5950
R37 4.7K
TO -4V
IC6 301
C16 20pf
C15 15 10V TANT
R36 75 MEG
C17 1 poly
R40 47K
C14 10 16V TANT
SWITCH LEGEND
S PURPOSE
1 POWER
2 10 Ω
3 100m V, μA, Ω
4 1V, mA, KΩ
5 10V, mA, KΩ
6 100 V, mA, KΩ
7 1000 V, mA, KΩ
8 10 AMP, MEG Ω
9 LOΩ
10 HIΩ
11 DCA
12 ACA
13 DCV
14 ACV
KEY NO USED
R48
C21
D17
S14
Q11
IC7
DS-4
RN-3
VR-3
J6
NOT USED
C2



FOR INTERNAL DISTRIBUTION ONLY

NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT IV, & DCV.
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

⏚ = CHASSIS GROUND (EARTH)
⏚ = COMMON - GROUND
▽ = LOW CURRENT GROUND

»» = CURRENT PATH OF VOLTAGE APPEARING AT THE INPUT
/// = THE OUTPUT OF THE INPUT DIVIDER CIRCUIT TO VX INPUT OF IC2, PIN 3

SHEET 1 OF 1			
496	174	9	001

		CHANGES	BY CHKD
A		RELEASE FOR INTERNAL DISTRIBUTION ONLY. MPC 4/4/78	
		Rel. to rel. of IN 4686 9-26-78	JJ.

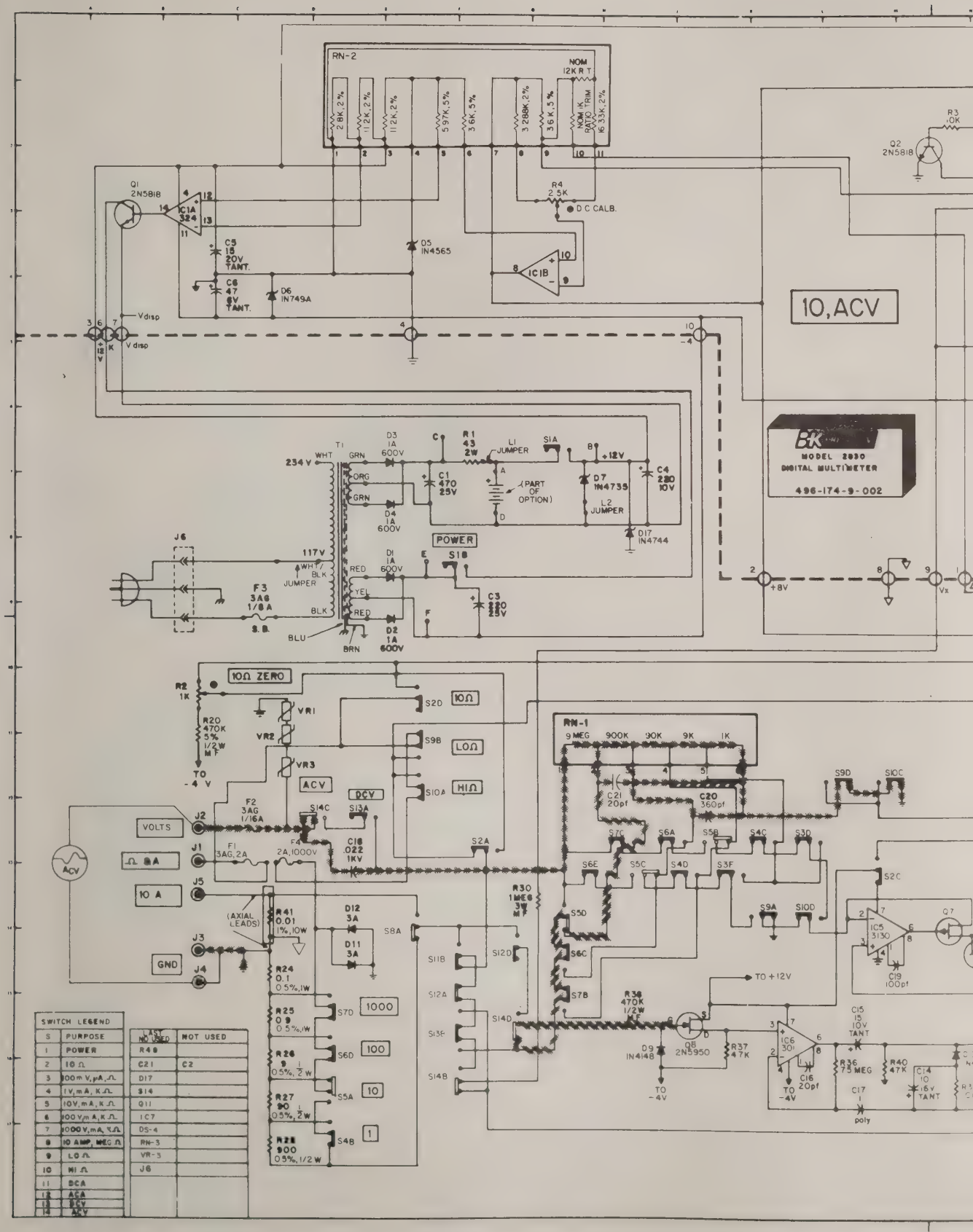
DYNASCAN CORPORATION
1801 W BELLE PLAINE CHICAGO ILLINOIS 60613

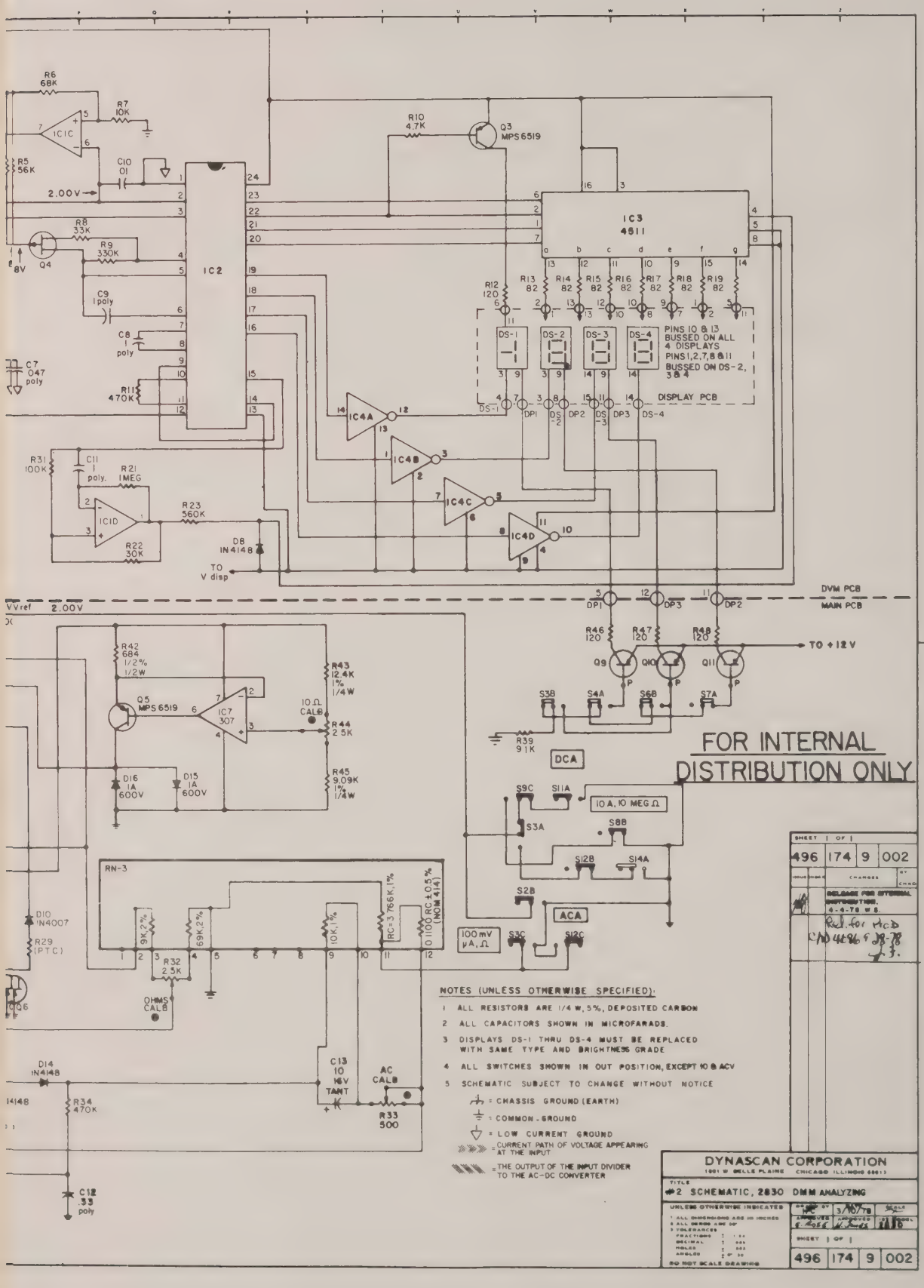
TITLE
#1 SCHEMATIC, 2830 DMM, ANALYZING

UNLESS OTHERWISE INDICATED
1. ALL DIMENSIONS ARE IN INCHES
2. ALL MINUS ARE 90°
3. TOLERANCES
FRACTIONS ± 1/64
DECIMAL .X ± .03
.XX ± .02
ANGLES ± 2° 30'
DO NOT SCALE DRAWING

DRAWN MC 4-4-78
CHECKED
APPROVED
SCALE
SHEET 1 OF 1

496	174	9	001


RN-2
NOM 12K R T
2.8K, 2%
112K, 2%
112K, 2%
5.97K, 5%
36K, 5%
3.288K, 2%
36K, 5%
NOM 1K 20 TURN TRIM
16.33K, 2%
Q1 2N5818
IC1A 324
C5 15 20V TANT.
C6 47 6V TANT.
D6 IN749A
D5 IN4565
R4 2.5K
D.C CALB.
IC1B
Vdisp
Q2 2N5818
R3 10K
10, ACV
B&K
MODEL 2830
DIGITAL MULTIMETER
496-174-9-002
+8V
Vx
T1
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
C1 470 25V
R1 43 2W
L1 JUMPER
S1A
+12V
C4 220 10V
D7 IN4735
L2 JUMPER
D17 IN4744
(PART OF OPTION)
J6
117V
WHT
BLK
JUMPER
F3 3AG 1/8A
S.B.
BLK
BLU
BRN
RED
YEL
RED
D1 1A 600V
D2 1A 600V
POWER
S1B
C3 220 25V
10Ω ZERO
R2 1K
R20 470K 5% 1/2W MF
TO -4 V
VR1
VR2
VR3
ACV
DCV
S14C
S13A
S2D
10Ω
S9B
LOΩ
S10A
HIΩ
S2A
VOLTS
Ω BA
10 A
GND
J1
J2
J3
J4
J5
F1 3AG, 2A
F2 3AG 1/16A
F4 2A, 1000V
C18 .022 1KV
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 2W
R27 90 0.5%, 2W
R28 900 0.5%, 1/2W
S7D
S6D
S5A
S4B
1000
100
10
1
S11B
S12A
S13F
S14B
S12D
S14D
R30 1 MEG 3W MF
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S7C
S6A
S5B
S4C
S3D
S9D
S10C
S6E
S5C
S4D
S3F
S9A
S10D
S2C
S5D
S6C
S7B
R38 470K 1/2W MF
TO +12V
D9 IN4148
Q8 2N5950
R37 47K
TO -4V
IC5 3130
C19 100pf
Q7
IC6 301
C16 20pf
C15 15 10V TANT
C17 1 poly
R36 75 MEG
R40 47K
C14 10 16V TANT
SWITCH LEGEND
S PURPOSE
1 POWER
2 10 Ω
3 300m V, μA, Ω
4 1V, mA, KΩ
5 10V, mA, KΩ
6 300 V, mA, KΩ
7 1000V, mA, VΩ
8 10 AMP, MEG Ω
9 LO Ω
10 HI Ω
11 DCA
12 ACA
13 DCV
14 ACV
LAST NO USED
R49
C21
D17
S14
Q11
IC7
DS-4
RN-3
VR-3
J6
NOT USED
C2



NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 10 & ACV
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

= CHASSIS GROUND (EARTH)

= COMMON - GROUND

= LOW CURRENT GROUND

= CURRENT PATH OF VOLTAGE APPEARING AT THE INPUT

= THE OUTPUT OF THE INPUT DIVIDER TO THE AC-DC CONVERTER

SHEET 1 OF 1

496	174	9	002

CHANGES

RELEASED FOR INTERNAL DISTRIBUTION. 4-6-78 W.S.

Ref. for Mod CN 4496 6-28-78 J.J.

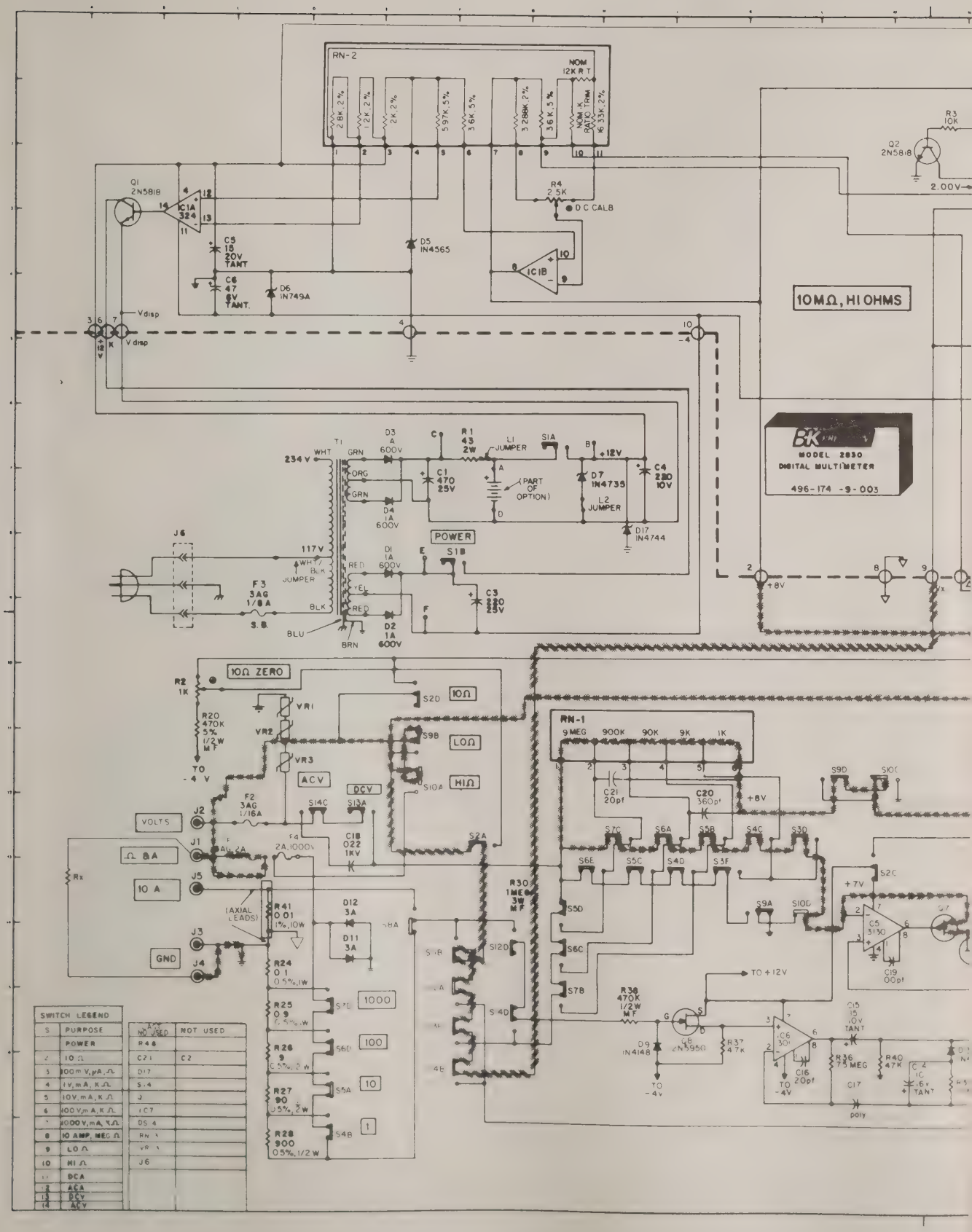
DYNASCAN CORPORATION
1801 W. BELLE PLAINE CHICAGO, ILLINOIS 60613

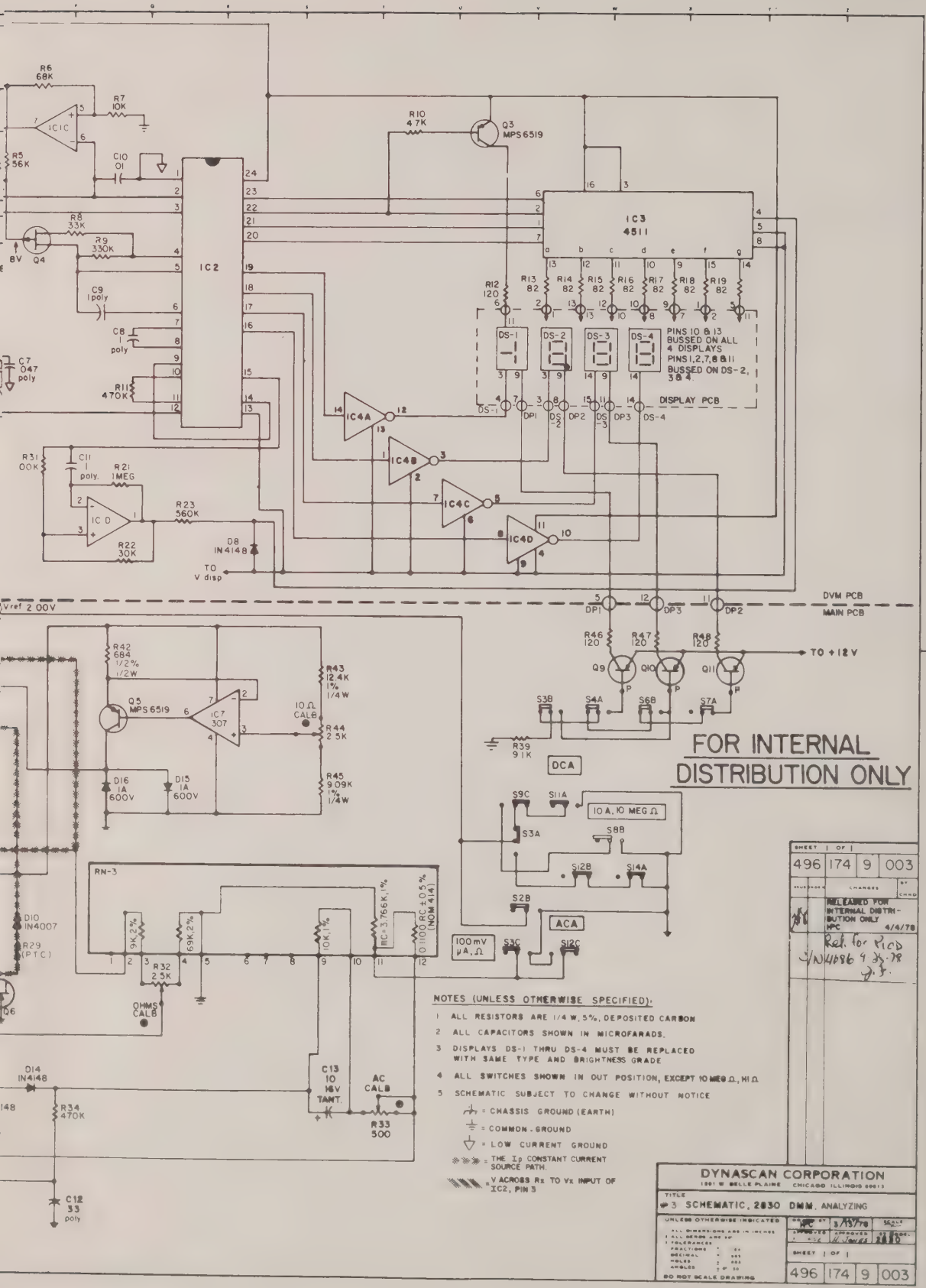
TITLE
#2 SCHEMATIC, 2830 DMM ANALYZING

UNLESS OTHERWISE INDICATED
1. ALL DIMENSIONS ARE IN INCHES
2. ALL DRILL SIZE OF
3. TOLERANCES
FRACTIONS ± 1/64
DECIMAL ± .005
HOLES ± .003
ANGLES ± 0° 30'
DO NOT SCALE DRAWING

DRAWN BY 3/10/78
APPROVED
APPROVED
SCALE
SHEET 1 OF 1

496	174	9	002


RN-2
NOM 12K R T
2.8K, 2%
12K, 2%
2K, 2%
5.97K, 5%
36K, 5%
3.284K, 2%
36K, 5%
NOM 1K RATIO TRIM
16.33K, 2%
R3 10K
Q2 2N5818
2.00V
Q1 2N5818
IC1A 324
C5 18 20V TANT
C6 47 6V TANT.
D6 IN749A
D5 IN4565
R4 2.5K
DC CALB
IC1B
Vdisp
10MΩ, HI OHMS
B&K
MODEL 2830
DIGITAL MULTIMETER
496-174 -9-003
T1
234 V
WHT
GRN
ORG
GRN
D3 4A 600V
D4 1A 600V
C1 470 25V
R1 43 2W
L1 JUMPER
S1A
B
+12V
C4 220 10V
D7 IN4735
L2 JUMPER
D17 IN4744
(PART OF OPTION)
POWER
S1B
D1 1A 600V
D2 1A 600V
C3 220 25V
J6
117V
WHT/BLK JUMPER
RED
YEL
RED
BLK
BLU
BRN
F3 3AG 1/8A S.B.
+8V
10Ω ZERO
R2 1K
VR1
VR2
VR3
R20 470K 5% 1/2W MF
TO -4 V
ACV
DCV
S2D
10Ω
S9B
LOΩ
S10A
HIΩ
S2A
S1C
S1A
F2 3AG 1/16A
F4 2A, 1000V
C18 022 1KV
J2
VOLTS
J1
Ω 8A
J5
10 A
J3
GND
J4
Rx
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
S1B
S12D
S4D
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 2W
R27 90 0.5%, 2W
R28 900 0.5%, 1/2W
S7D
1000
S6D
100
S5A
10
S4B
1
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S5D
S6C
S7B
S9A
S10D
R30 1 MEG 3% MF
R38 470K 1/2W MF
TO +12V
D9 IN4148
Q8 2N5950
R37 4.7K
TO -4V
IC6 3130
C16 20pf
C15 15 10V TANT
R36 7.5 MEG
R40 47K
C17
poly
+7V
S2C
IC5 3130
C19 00pf
Q7
C2 .1 TANT
SWITCH LEGEND
S | PURPOSE
1 POWER
2 10 Ω
3 300 mV, pA, Ω
4 1V, mA, K Ω
5 10V, mA, K Ω
6 100 V, mA, K Ω
7 1000 V, mA, K Ω
8 10 AMP, MEG Ω
9 LO Ω
10 HI Ω
11 DCA
12 ACA
13 DCV
14 ACV
A/D NO USED
R48
C21
D17
S14
J
IC7
DS 4
RN 1
VR 1
J6
NOT USED
C2



NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 10 MEG Ω., HI Ω.
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

= CHASSIS GROUND (EARTH)
= COMMON - GROUND
= LOW CURRENT GROUND
= THE I_D CONSTANT CURRENT SOURCE PATH.
= V ACROSS R_X TO V_X INPUT OF IC2, PIN 3

SHEET 1 OF 1			
496	174	9	003

REVISIONS	CHANGES	BY CHKD
	RELEASED FOR INTERNAL DISTRIBUTION ONLY MPC 4/4/78	
	Ref. for PCB S/N 41886 4-25-78 J.F.	

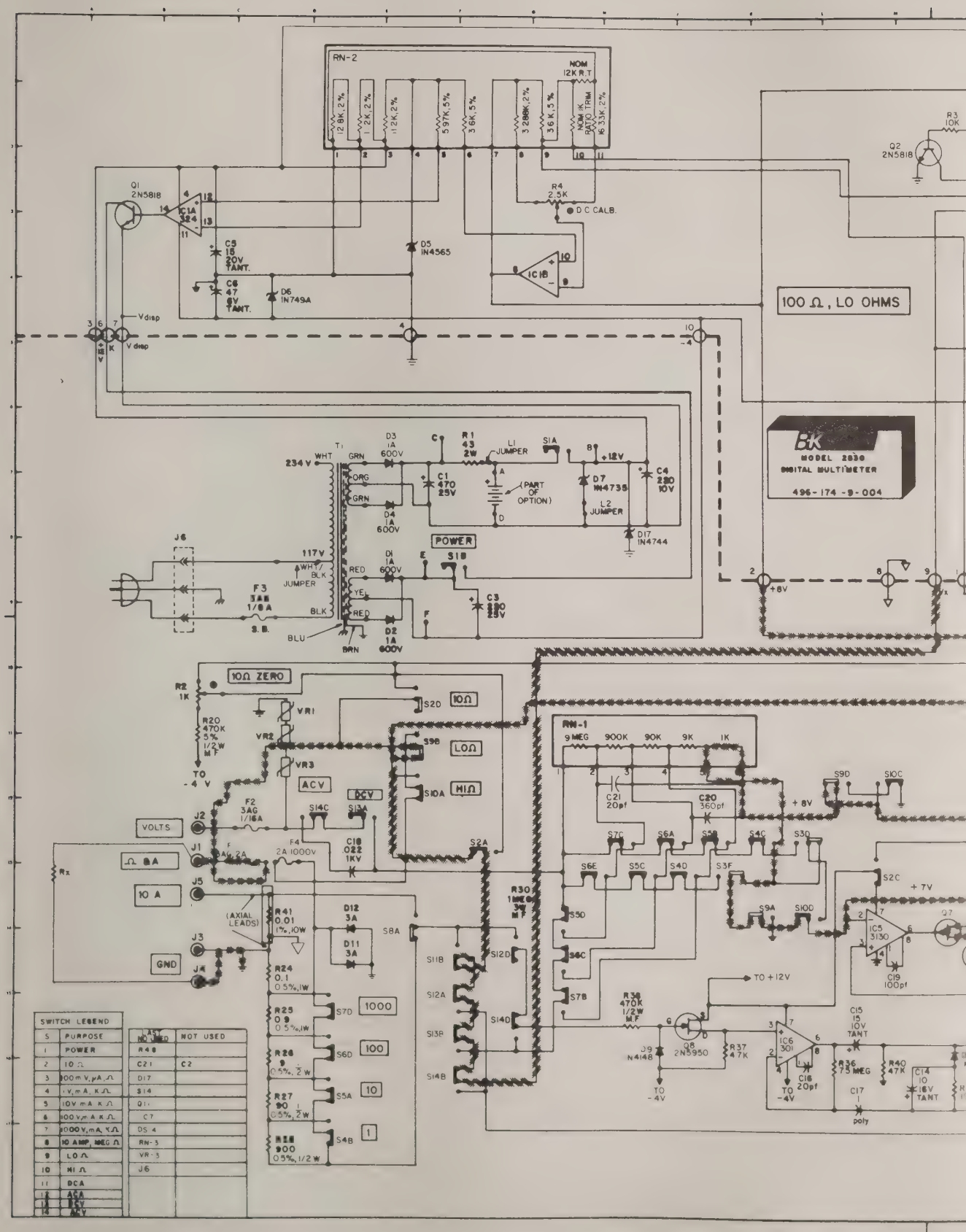
DYNASCAN CORPORATION
1801 W. BELLE PLAINE CHICAGO ILLINOIS 60613

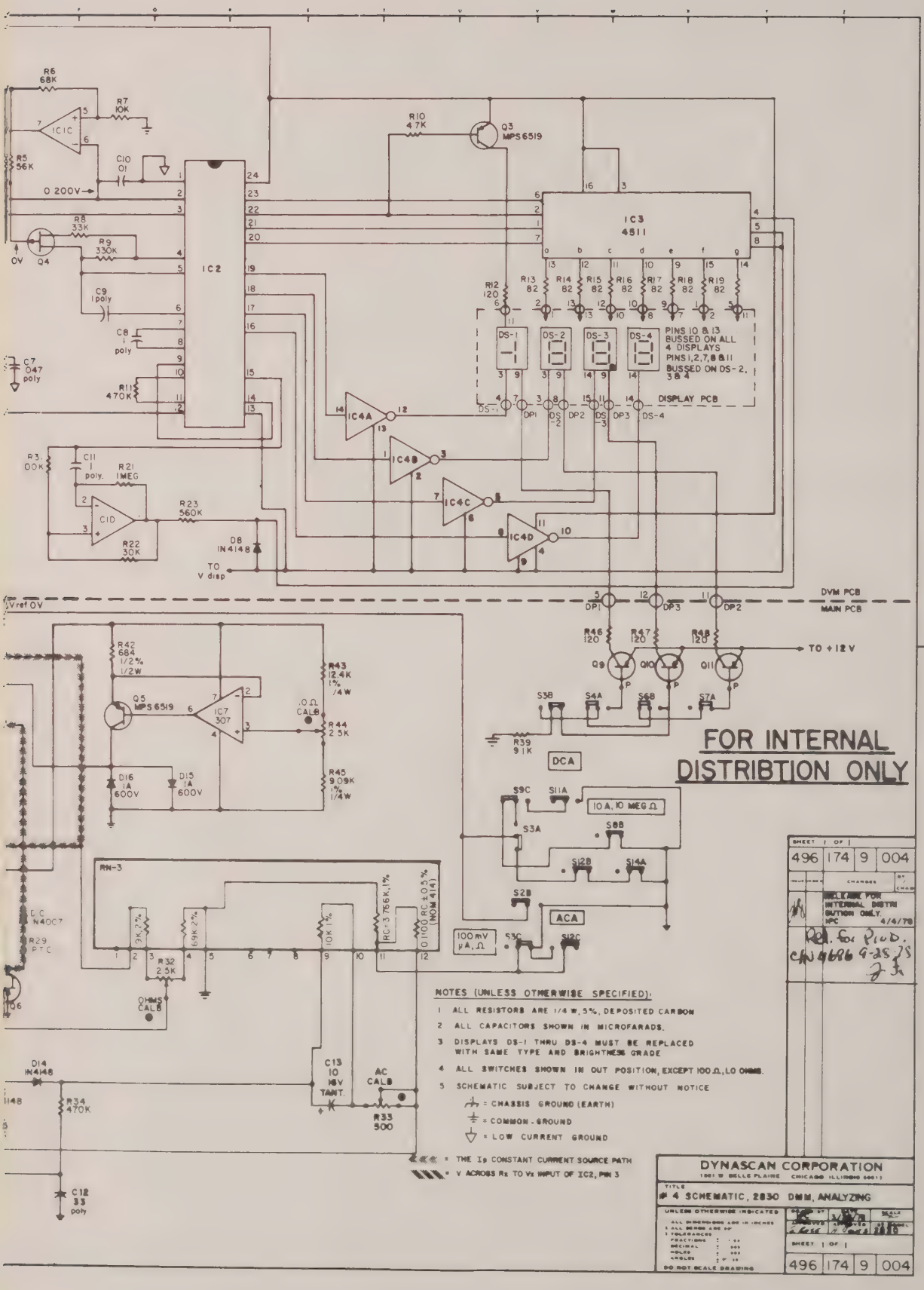
TITLE: 3 SCHEMATIC, 2830 DMM. ANALYZING

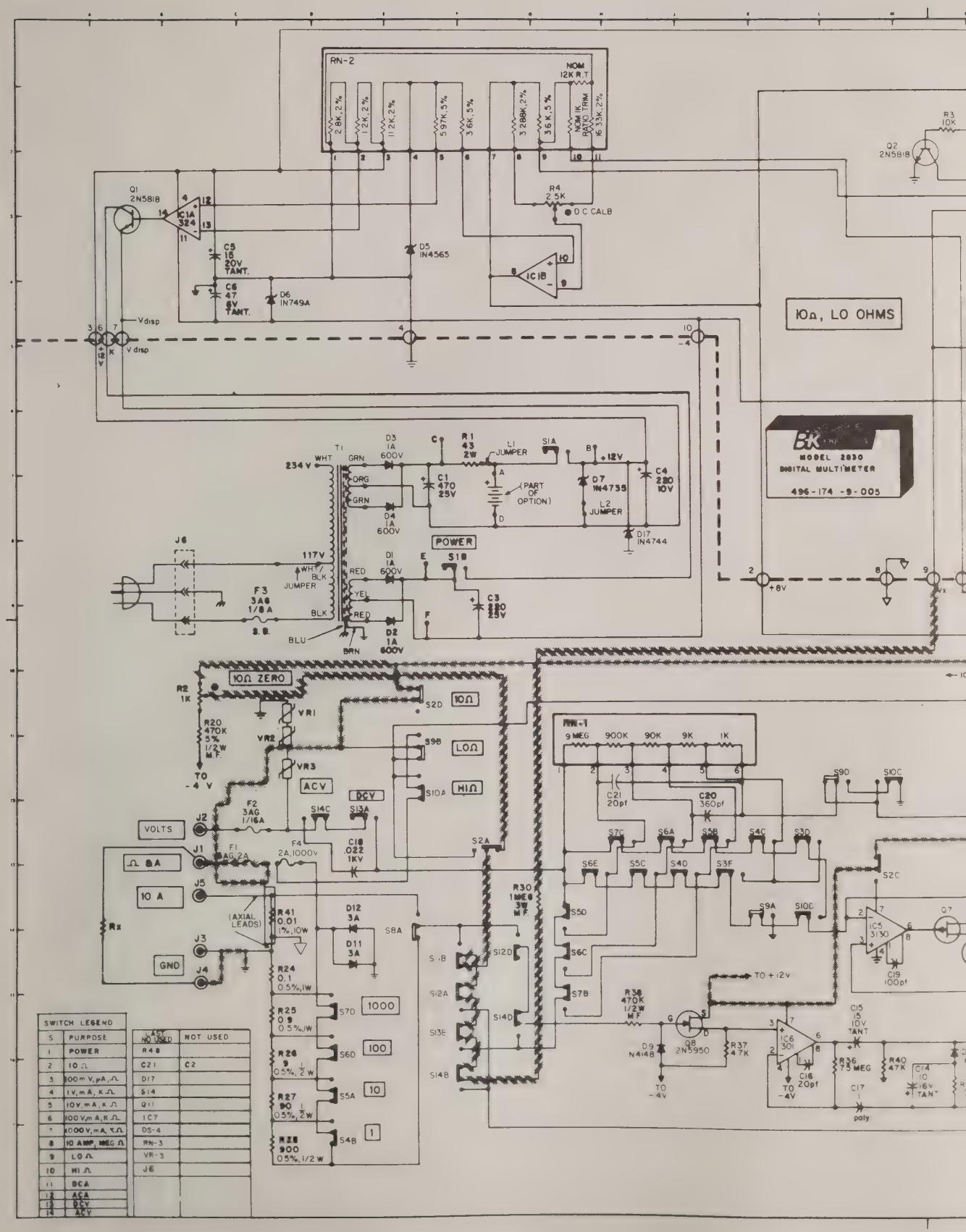
UNLESS OTHERWISE INDICATED
ALL DIMENSIONS ARE IN INCHES
ALL DECIMALS ARE ±
TOLERANCES
FRACTIONS ± .06
DECIMAL ± .005
HOLES ± .003
ANGLES ± 1°
DO NOT SCALE DRAWING

DR. 3/15/78 SCALE
APPROVED APPROVED

SHEET 1 OF 1			
496	174	9	003

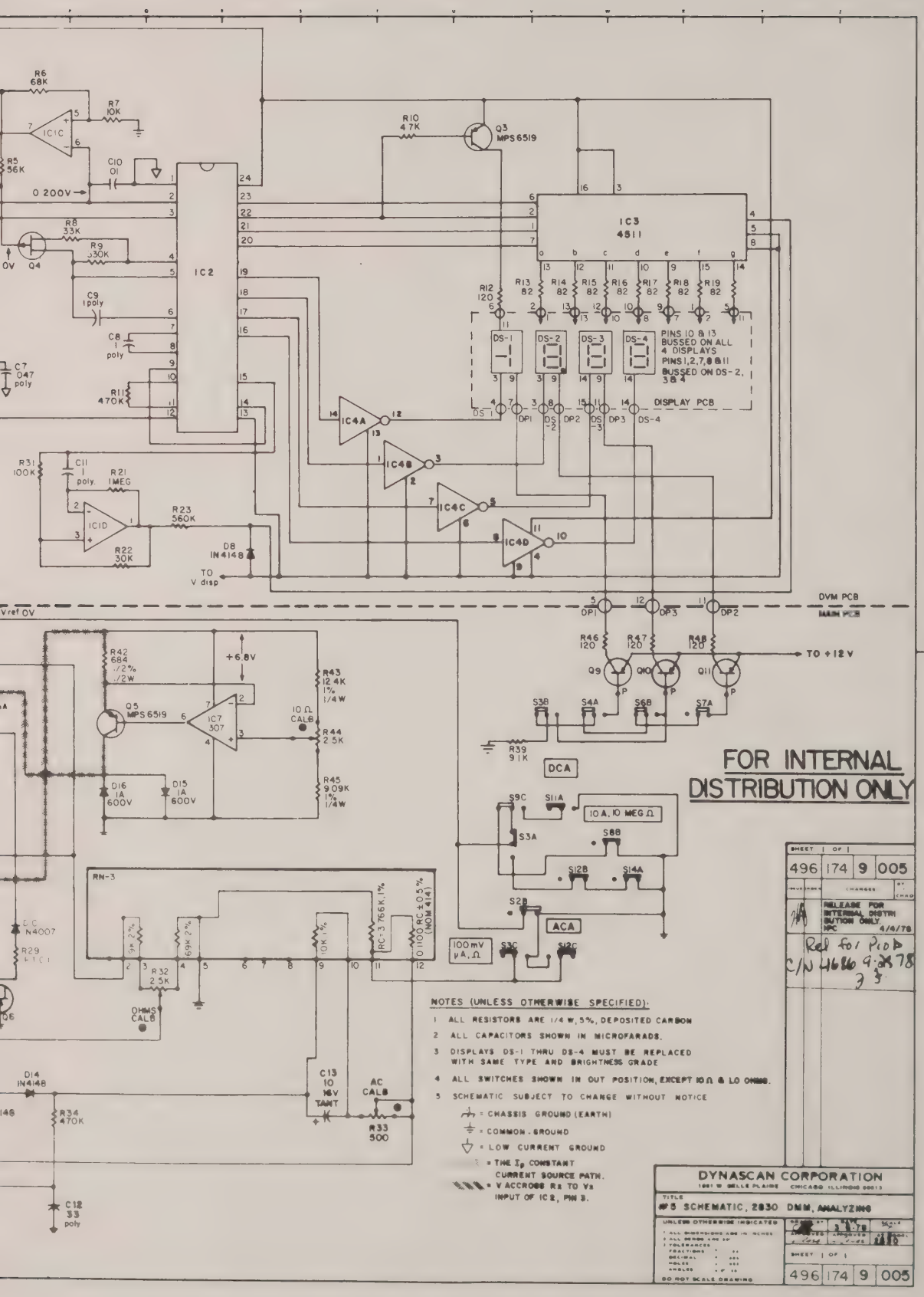

RN-2
NOM 12K R.T.
12.8K, 2%
1.2K, 2%
11.2K, 2%
5.97K, 5%
3.6K, 5%
3.288K, 2%
3.6K, 5%
NOM 1K BOARD TRIM
16.33K, 2%
Q1 2N5818
IC1A 324
C5 15 20V TANT.
C6 47 6V TANT.
D5 IN4565
D6 IN749A
R4 2.5K
D.C CALB.
IC1B
Vdisp
R3 10K
Q2 2N5818
100 Ω, LO OHMS
BK
MODEL 2830
DIGITAL MULTIMETER
496-174-9-004
+8V
T1
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
C
R1 43 2W
L1 JUMPER
S1A
+12V
C1 470 25V
(PART OF OPTION)
D7 IN4735
L2 JUMPER
C4 220 10V
D17 IN4744
J6
117V
WHT/BLK
JUMPER
BLK
F3 3AB 1/8A
S.B.
BLU
BRN
RED
YEL
RED
D1 1A 600V
D2 1A 600V
POWER
S1B
E
F
C3 220 25V
10Ω ZERO
R2 1K
VR1
VR2
VR3
R20 470K 5% 1/2W M.F.
TO -4 V
ACV
DCV
S14C
S13A
S2D
10Ω
S9B
LOΩ
S10A
MIΩ
S2A
F2 3AG 1/16A
F4 2A 1000V
C18 .022 1KV
VOLTS
J2
J1
Ω BA
10 A
J5
J3
GND
J4
Rx
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
S11B
S12A
S13B
S14B
S12D
S14D
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 2W
R27 90 0.5%, 2W
R28 900 0.5%, 1/2 W
S7D
1000
S6D
100
S5A
10
S4B
1
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
+8V
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S5D
S4C
S7B
S9A
S10D
S2C
+7V
IC5 3130
C19 100pf
Q7
R30 1MEG 3% M.F.
TO +12V
R38 470K 1/2W M.F.
D9 N4148
Q8 2N5950
R37 4.7K
IC6 301
C16 20pf
TO -4V
C15 15 10V TANT
R36 .75 MEG
C17
poly
R40 47K
C14 10 16V TANT
SWITCH LEGEND
S | PURPOSE
1 | POWER
2 | 10 Ω
3 | 300m V, μA, Ω
4 | V, mA, K Ω
5 | 10V mA K Ω
6 | 300 V, m A K Ω
7 | 1000 V, mA, K Ω
8 | 10 AMP, MEG Ω
9 | LO Ω
10 | MI Ω
11 | DCA
12 | ACA
13 | ACV
14 | DCV
NOT USED
R48
C21
D17
S14
Q11
C7
DS 4
RN-3
VR-3
J6
C2


R6 68K
R7 10K
IC1C
R5 56K
C10 01
0 200V
R10 4.7K
Q3 MPS6519
IC3 4511
R8 33K
R9 330K
Q4
0V
IC2
R12 120
R13 82
R14 82
R15 82
R16 82
R17 82
R18 82
R19 82
DS-1
DS-2
DS-3
DS-4
PINS 10 & 13 BUSSED ON ALL 4 DISPLAYS
PINS 1,2,7,8 & 11 BUSSED ON DS-2, 3 & 4
DISPLAY PCB
C9 1 poly
C8 1 poly
C7 047 poly
R11 470K
IC4A
IC4B
IC4C
IC4D
R3 .00K
C11 1 poly.
R21 1MEG
C1D
R22 30K
R23 560K
D8 IN4148
TO V disp
Vref 0V
DVM PCB
MAIN PCB
R46 120
R47 120
R48 120
TO +12V
Q9
Q10
Q11
S3B
S4A
S6B
S7A
R39 91K
DCA
R42 684 1/2% 1/2W
Q5 MPS 6519
IC7 307
R43 12.4K 1% 1/4W
.0Ω CAL
R44 2.5K
R45 9.09K 1% 1/4W
D16 1A 600V
D15 1A 600V
S9C
S11A
10A, 10 MEG Ω
S3A
S8B
S12B
S14A
S2B
ACA
100mV μA, Ω
S3C
S12C
RN-3
3K 2%
6.9K 2%
10K 1%
RC=3.766K, 1%
0.1100 RC ±0.3% (NOM 4.14)
R32 2.5K
OHMS CAL
D14 IN4148
R34 470K
C13 10 16V TANT.
AC CAL
R33 500
C12 33 poly
D.C N4007
R29 P.T.C
106
FOR INTERNAL DISTRIBTION ONLY
SHEET 1 OF 1
496 174 9 004
REL. FOR INTERNAL DISTRIB ONLY. HPC 4/4/78
Rel. for Prod. CN 4686 6-28-78
NOTES (UNLESS OTHERWISE SPECIFIED):
1 ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2 ALL CAPACITORS SHOWN IN MICROFARADS.
3 DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4 ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 100Ω, LO OHMS.
5 SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE
= CHASSIS GROUND (EARTH)
= COMMON - GROUND
= LOW CURRENT GROUND
= THE Ip CONSTANT CURRENT SOURCE PATH
= V ACROSS Rx TO Vx INPUT OF IC2, PIN 3
DYNASCAN CORPORATION
1801 W BELLE PLAINE CHICAGO ILLINOIS 60613
TITLE
4 SCHEMATIC, 2830 DMM, ANALYZING
UNLESS OTHERWISE INDICATED
ALL DIMENSIONS ARE IN INCHES
ALL BURRS ARE 10 MIL
TOLERANCES
FRACTIONAL ± 1/64
DECIMAL ± .005
MOLDED ± .010
ANGLES ± 1°
DO NOT SCALE DRAWING
SCALE
SHEET 1 OF 1
496 174 9 004



SWITCH LEGEND		
S	PURPOSE	
1	POWER	
2	10 Ω	
3	300m V, μA, Ω	
4	1V, mA, K Ω	
5	10V, mA, K Ω	
6	100 V, mA, K Ω	
7	1000 V, mA, K Ω	
8	10 AMP, MEG Ω	
9	LO Ω	
10	HI Ω	
11	DCA	
12	ACA	
13	DCV	
14	ACV	

ADDED NO USED	NOT USED
R48	
C21	C2
D17	
S14	
Q11	
IC7	
DS-4	
RN-3	
VR-3	
J6	



FOR INTERNAL DISTRIBUTION ONLY

NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 10 Ω & LO OHMS.
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

= CHASSIS GROUND (EARTH)
= COMMON - GROUND
= LOW CURRENT GROUND
= THE I_p CONSTANT CURRENT SOURCE PATH.
= V ACCROSS R2 TO V2 INPUT OF IC2, PIN 3.

SHEET 1 OF 1			
496	174	9	005

	CHANGES	BY / CHKD
1	RELEASE FOR INTERNAL DISTR BUTION ONLY. 4/4/78 NPC	

Rel for Pilot
C/N 4666 9-28-78
JJ

DYNASCAN CORPORATION
1801 W BELLE PLAINE CHICAGO ILLINOIS 60613

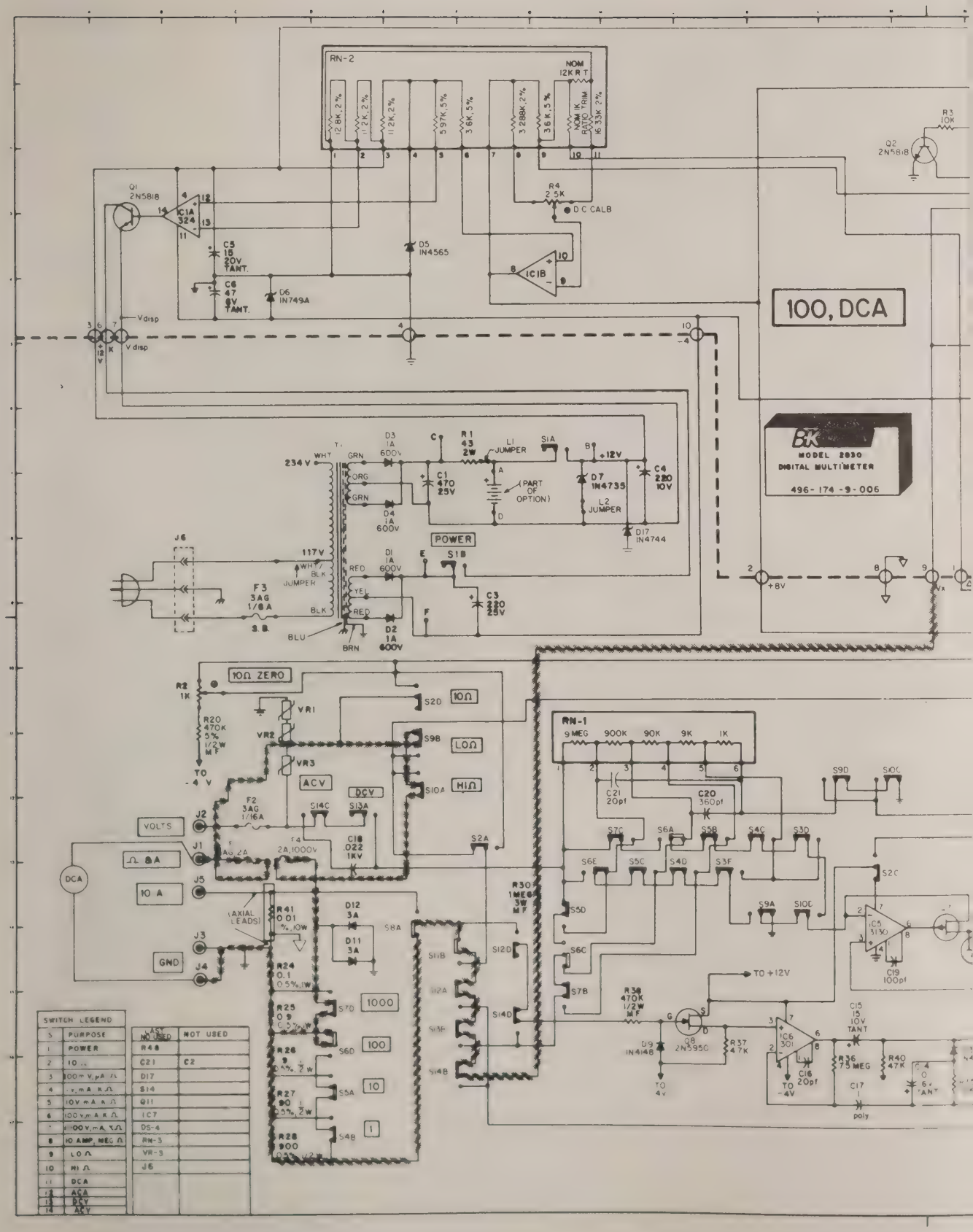
TITLE
#3 SCHEMATIC, 2830 DMM, ANALYZING

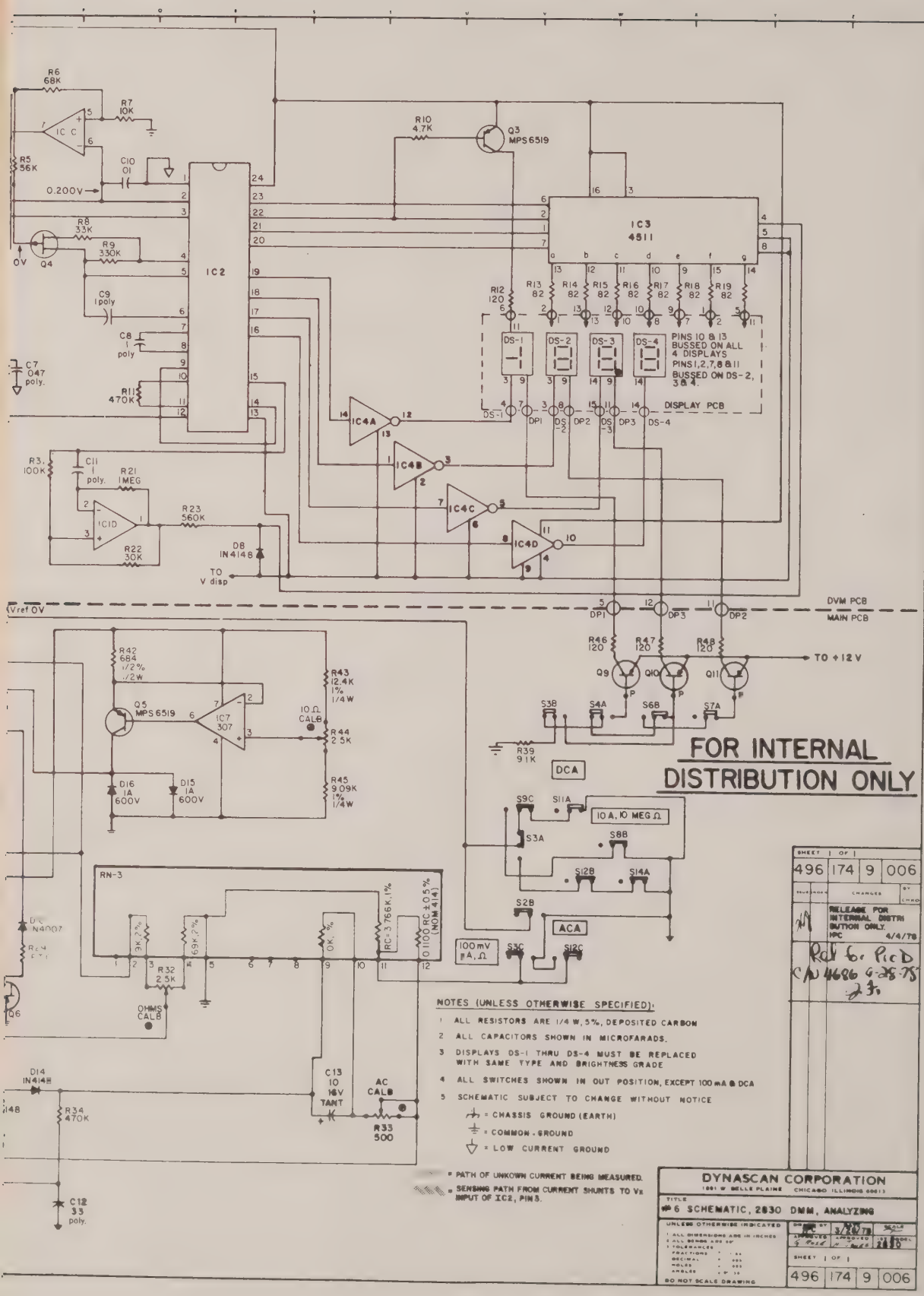
UNLESS OTHERWISE INDICATED
1. ALL DIMENSIONS ARE IN INCHES
2. ALL BENDS ARE 90°
3. TOLERANCES
FRACTIONS ± .XX
DECIMAL ± .XXX
HOLES ± .XXX
ANGLES ± 0° 15'

DO NOT SCALE DRAWING

DRAWN 3-7-78
APPROVED
MATERIAL
FINISH
SCALE
SIZE B
DWG. NO.

SHEET 1 OF 1			
496	174	9	005


RN-2
NOM 12K R T
12.8K, 2%
11.2K, 2%
11.2K, 2%
5.97K, 5%
3.6K, 5%
3.288K, 2%
3.6K, 5%
NOM 1K RATIO TRIM
16.33K, 2%
R3 10K
Q2 2N5818
Q1 2N5818
IC1A 324
C5 1B 20V TANT.
C6 47 6V TANT.
D5 IN4565
D6 IN749A
R4 2.5K
D.C CALB
IC1B
100, DCA
Vdisp
12 V
MODEL 2030
DIGITAL MULTIMETER
496-174-9-006
+8V
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
C1 470 25V
R1 43 2W
L1 JUMPER
S1A
+12V
D7 IN4735
L2 JUMPER
D17 IN4744
C4 220 10V
(PART OF OPTION)
POWER
S1B
117V
WHT
BLK
JUMPER
F3 3AG 1/8A
S.B.
BLK
BLU
BRN
RED
YEL
RED
D1 1A 600V
D2 1A 600V
C3 220 25V
J6
10Ω ZERO
R2 1K
VR1
VR2
VR3
R20 470K 5% 1/2W MF
TO -4 V
S2D
10Ω
S9B
LOΩ
S10A
HIΩ
ACV
DCV
S14C
S13A
F2 3AG 1/16A
F4 2A, 1000V
C18 .022 1KV
S2A
VOLTS
J2
J1
J5
J3
J4
DCA
Ω 8A
10 A
GND
(AXIAL LEADS)
R41 0.01 1% 10W
R24 0.1 0.5% 1W
R25 0.9 0.5% 1W
R26 9 0.5% 1/2W
R27 90 0.5% 2W
R28 900 0.5% 2W
D12 3A
D11 3A
S8A
S11B
S12A
S13F
S14B
S12D
S14D
R30 1MEG 3W MF
S7D
1000
S6D
100
S5A
10
S4B
1
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S5D
S9A
S10D
S2C
S6C
S7B
IC5 3130
C19 100pf
TO +12V
R38 470K 1/2W MF
D9 IN4148
Q8 2N5950
R37 4.7K
TO 4V
IC6 301
C16 20pf
TO -4V
C15 15 10V TANT
R36 75 MEG
C17 1 poly
R40 47K
C14 .6V TANT
SWITCH LEGEND
S PURPOSE
1 POWER
2 10 Ω
3 300m V, μA Ω
4 V, mA Ω
5 10V mA Ω
6 100 V, m A Ω
7 1000 V, mA, Ω
8 10 AMP, MEG Ω
9 LO Ω
10 HI Ω
11 DCA
12 ACA
13 DCV
14 ACV
ASSY NO USED
R48
C21
D17
S14
Q11
IC7
DS-4
RN-3
VR-3
J6
NOT USED
C2



NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 100 mA & DCA
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

= CHASSIS GROUND (EARTH)
= COMMON - GROUND
= LOW CURRENT GROUND
= PATH OF UNKOWN CURRENT BEING MEASURED.
= SENSING PATH FROM CURRENT SHUNTS TO Vx INPUT OF IC2, PIN 3.

SHEET 1 OF 1			
496	174	9	006

	CHANGES	BY CHKD
24	RELEASE FOR INTERNAL DISTRIBUTION ONLY HPC 4/4/78	

Ref to PicD CA 4686 6-28-78 JS

DYNASCAN CORPORATION
1801 W BELLE PLAINE CHICAGO (ILLINOIS 60613)

TITLE
#6 SCHEMATIC, 2830 DMM, ANALYZING

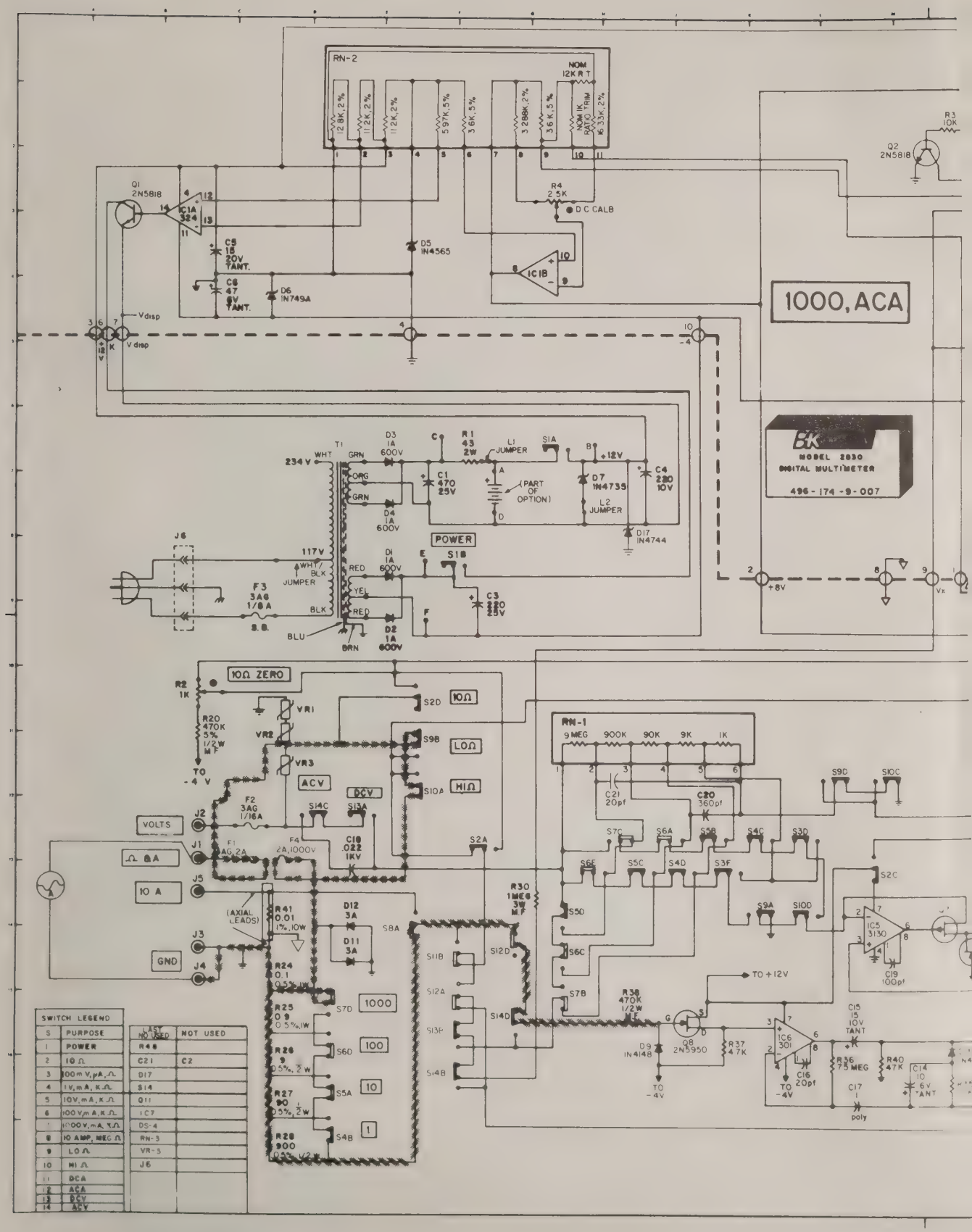
UNLESS OTHERWISE INDICATED
1. ALL DIMENSIONS ARE IN INCHES
2. ALL BENDS ARE 90°
3. TOLERANCES
FRACTIONS ± .xx
DECIMAL ± .xxx
HOLES ± .xxx
ANGLES ± 1°

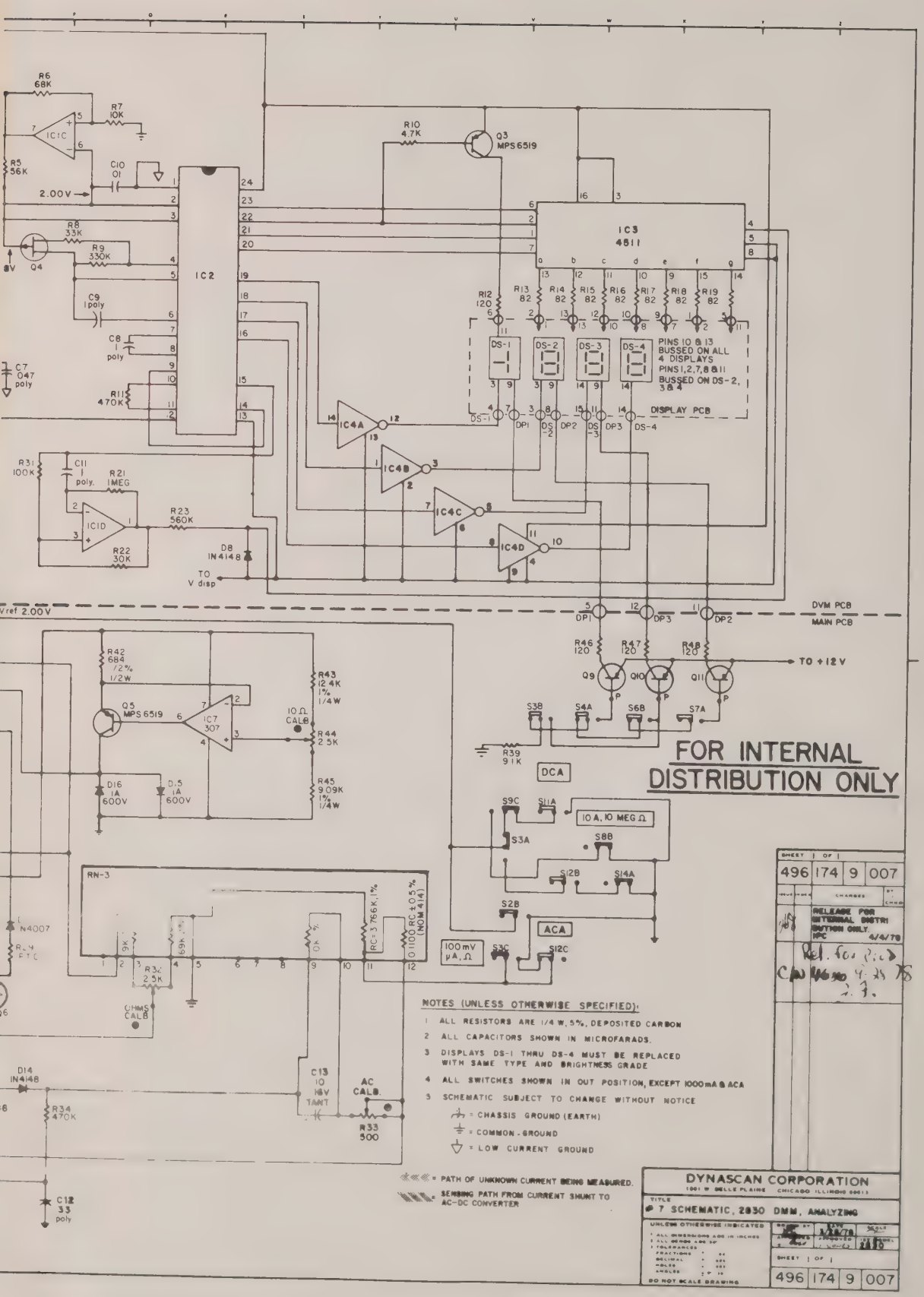
DO NOT SCALE DRAWING

DR BY 3/20/78 | APPROVED | SCALE
CHECKED | APPROVED | DWG NO 2830

SHEET 1 OF 1

496	174	9	006


1000, ACA
B&K
MODEL 2030
DIGITAL MULTIMETER
496-174-9-007
RN-2
NOM 12K R T
12K, 2%
12K, 2%
112K, 2%
5.97K, 5%
36K, 5%
3.288K, 2%
3.6K, 5%
1K RATIO TRIM
16.33K, 2%
R3 10K
Q2 2N5818
Q1 2N5818
IC1A 324
IC1B
R4 2.5K
D.C CALB
C5 18 20V TANT.
C6 47 6V TANT.
D6 IN749A
D5 IN4565
Vdisp
V disp
+18 V
K
T1
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
D1 1A 600V
D2 1A 600V
R1 43 2W
L1 JUMPER
SIA
C1 470 25V
(PART OF OPTION)
D7 IN4739
L2 JUMPER
+12V
C4 220 10V
D17 IN4744
POWER
S1B
C3 220 25V
J6
117V
WHT
BLK
JUMPER
RED
YEL
RED
BLK
BLU
BRN
F3 3AG 1/8A
S.B.
+8V
Vx
10Ω ZERO
R2 1K
VR1
VR2
VR3
R20 470K 5% 1/2W M F
TO -4 V
S2D
10Ω
S9B
LOΩ
S10A
HIΩ
ACV
DCV
S14C
S13A
S2A
F2 3AG 1/16A
F4 2A, 1000V
C18 .022 1KV
VOLTS
J2
J1
Ω 8A
J5
10 A
J3
GND
J4
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 2W
R27 90 0.5%, 2W
R28 900 0.5%, 1/2W
S7D
1000
S6D
100
S5A
10
S4B
1
S11B
S12A
S13F
S14B
S12D
S14D
R30 1MEG 3W M F
S5D
S6C
S7B
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S9A
S10D
S2C
IC5 3130
C19 100pf
TO +12V
R38 470K 1/2W M F
Q8 2N5950
D9 IN4148
R37 47K
TO -4V
IC6 301
C16 20pf
C15 15 10V TANT
R36 75 MEG
R40 47K
C14 10 6V TANT
C17
poly
SWITCH LEGEND
S PURPOSE
1 POWER
2 10 Ω
3 100 mV, μA, Ω
4 1V, mA, KΩ
5 10V, mA, KΩ
6 100V, mA, KΩ
7 1000V, mA, TΩ
8 10 AMP, MEG Ω
9 LO Ω
10 HI Ω
11 DCA
12 ACA
13 DCV
14 ACV
ASY NO USED
R48
C21
D17
S14
Q11
IC7
DS-4
RN-3
VR-3
J6
NOT USED
C2



NOTES (UNLESS OTHERWISE SPECIFIED):

1. ALL RESISTORS ARE 1/4 W, 5%, DEPOSITED CARBON
2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 1000mA & ACA
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

= CHASSIS GROUND (EARTH)
= COMMON - GROUND
= LOW CURRENT GROUND

= PATH OF UNKNOWN CURRENT BEING MEASURED.
= SENSING PATH FROM CURRENT SHUNT TO AC-DC CONVERTER

SHEET 1 OF 1			
496	174	9	007

	CHANGES	BY
	RELEASED FOR INTERNAL DISTRI BUTION ONLY. HPC 4/4/78	CHMB

Ref. for pics
C20 1000 4.38
2.7.

DYNASCAN CORPORATION
1001 W BELLE PLAINE CHICAGO ILLINOIS 60613

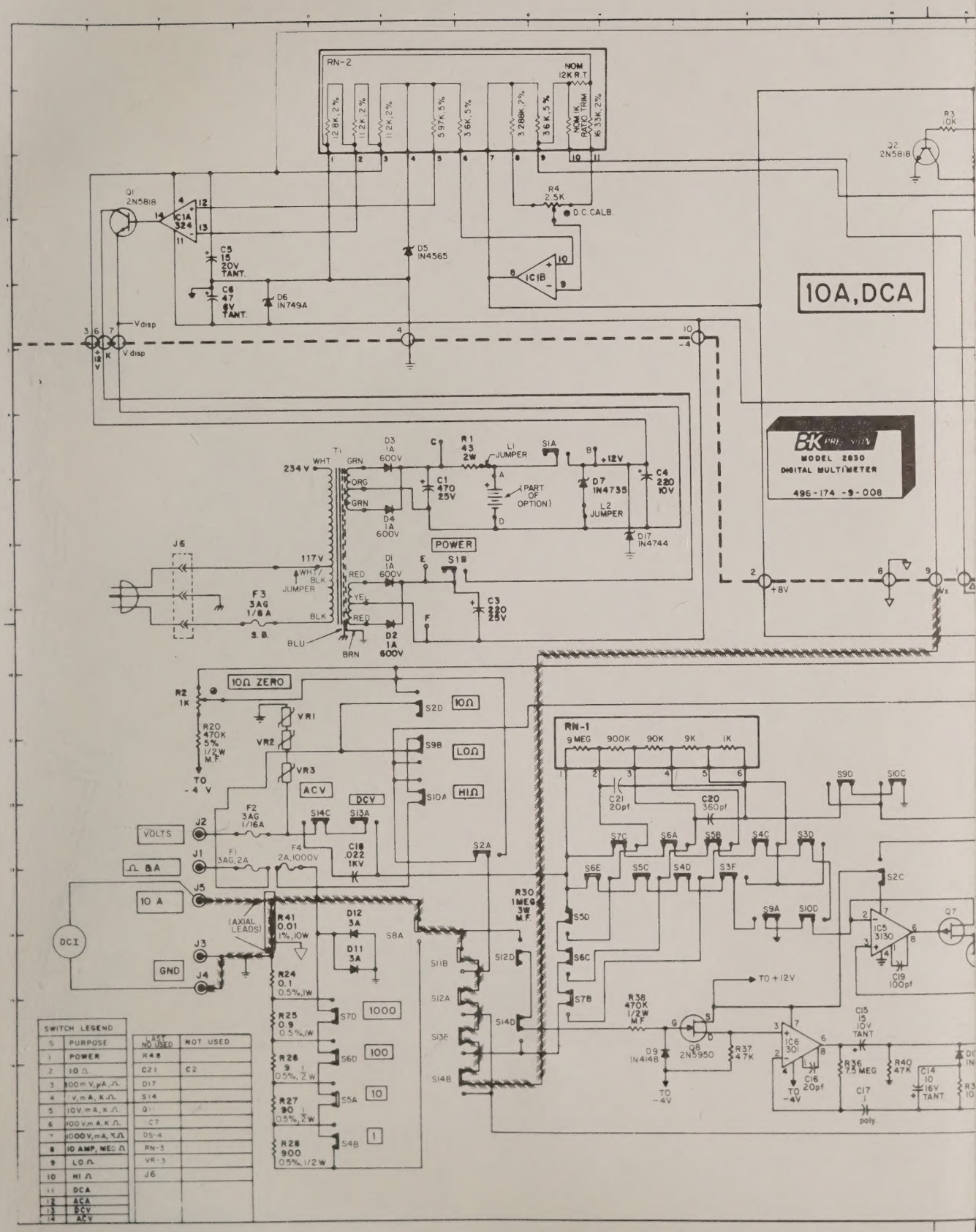
TITLE
7 SCHEMATIC, 2830 DMM, ANALYZING

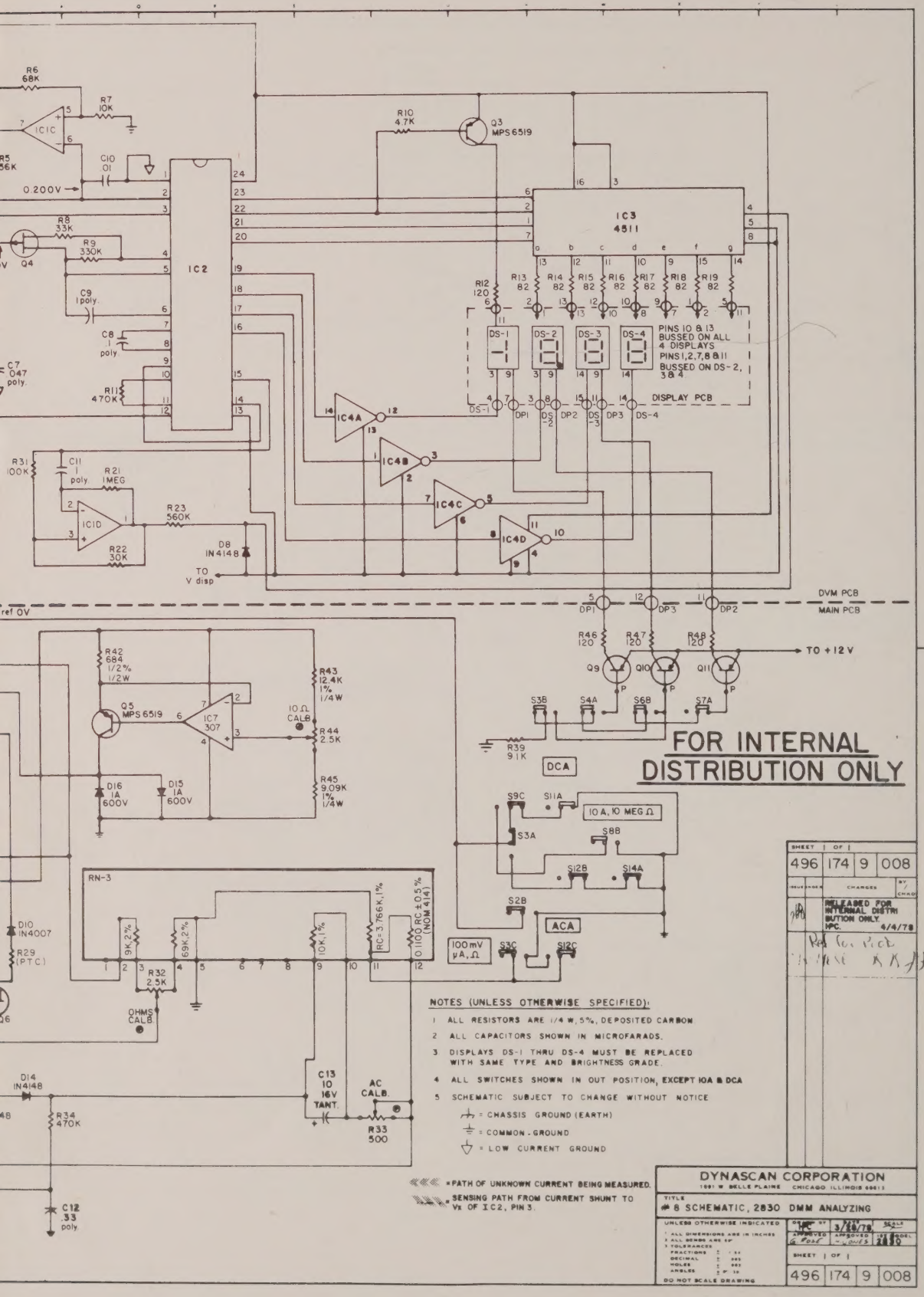
UNLESS OTHERWISE INDICATED
1 ALL DIMENSIONS ARE IN INCHES
2 ALL DRAWN ARE 90°
3 TOLERANCES
FRACTIONS ±
DECIMAL .X ±
.XX ±
.XXX ±
ANGLES ±
DO NOT SCALE DRAWING

BY	DATE
DRAWN	
CHECKED	
ENG APPR	
MFG APPR	

SIZE | DWG NO | REV

SHEET 1 OF 1			
496	174	9	007


RN-2
NOM 12K R.T
12.8K, 2%
11.2K, 2%
11.2K, 2%
5.97K, 5%
3.6K, 5%
3.288K, 2%
36K, 5%
NOM 1K RATIO TRIM
16.33K, 2%
R3 10K
Q2 2N5818
Q1 2N5818
IC1A 324
R4 2.5K
D.C. CALB.
C3 15 20V TANT.
C6 47 6V TANT.
D6 IN749A
D5 IN4565
IC1B
10A, DCA
Vdisp
V disp
MODEL 2830
DIGITAL MULTIMETER
496-174 -9-008
T1
234 V
WHT
GRN
ORG
GRN
D3 1A 600V
D4 1A 600V
D1 1A 600V
D2 1A 600V
R1 43 2W
L1 JUMPER
L2 JUMPER
(PART OF OPTION)
C1 470 25V
C4 220 10V
D7 IN4735
D17 IN4744
+12V
+8V
POWER
S1B
C3 220 25V
J6
117V
WHT/ BLK JUMPER
F3 3AG 1/8A S.B.
BLK
RED
YEL
RED
BLU
BRN
10Ω ZERO
R2 1K
R20 470K 5% 1/2W M.F.
TO -4 V
VR1
VR2
VR3
ACV
DCV
S2D
10Ω
S9B
LOΩ
S10A
HIΩ
S14C
S13A
S2A
VOLTS
Ω &A
10 A
DCI
GND
J1
J2
J3
J4
J5
F1 3AG, 2A
F2 3AG 1/16A
F4 2A, 1000V
C18 .022 1KV
(AXIAL LEADS)
R41 0.01 1%, 10W
D12 3A
D11 3A
S8A
S11B
S12A
S13B
S14B
S12D
S14D
R30 1MEG 3W M.F.
R24 0.1 0.5%, 1W
R25 0.9 0.5%, 1W
R26 9 0.5%, 1/2W
R27 90 0.5%, 1/2W
R28 900 0.5%, 1/2W
S7D
1000
S6D
100
S5A
10
S4B
1
RN-1
9 MEG
900K
90K
9K
1K
C21 20pf
C20 360pf
S9D
S10C
S7C
S6A
S5B
S4C
S3D
S6E
S5C
S4D
S3F
S2C
S5D
S9A
S10D
S7B
S6C
IC5 3130
Q7
C19 100pf
TO +12V
R38 470K 1/2W M.F.
Q8 2N5950
D9 IN4148
R37 47K
IC6 301
C15 15 10V TANT
C16 20pf
C17 1 poly
R36 7.5 MEG
R40 47K
C14 10 16V TANT
TO -4V
SWITCH LEGEND
S PURPOSE
1 POWER
2 10 Ω
3 300 m V, μA, Ω
4 V, mA, K Ω
5 10V, mA, K Ω
6 300 V, mA, K Ω
7 1000V, mA, K Ω
8 10 AMP, MEG Ω
9 LO Ω
10 HI Ω
11 DCA
12 ACA
13 DCV
14 ACV
LAST NO USED
R48
C21
D17
S14
Q11
C7
DS-4
RN-3
VR-3
J6
NOT USED
C2



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NOTES (UNLESS OTHERWISE SPECIFIED):

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2. ALL CAPACITORS SHOWN IN MICROFARADS.
3. DISPLAYS DS-1 THRU DS-4 MUST BE REPLACED WITH SAME TYPE AND BRIGHTNESS GRADE.
4. ALL SWITCHES SHOWN IN OUT POSITION, EXCEPT 10A & DCA
5. SCHEMATIC SUBJECT TO CHANGE WITHOUT NOTICE

⏚ = CHASSIS GROUND (EARTH)
⏚ = COMMON - GROUND
▽ = LOW CURRENT GROUND

= PATH OF UNKNOWN CURRENT BEING MEASURED.
= SENSING PATH FROM CURRENT SHUNT TO Vx OF IC2, PIN 3.

SHEET 1 OF 1			
496	174	9	008

INITIALS	CHANGES	BY / CHKD
JHH	RELEASED FOR INTERNAL DISTRI BUTION ONLY. HPC. 4/4/78	

DYNASCAN CORPORATION
1801 W. BELLE PLAINE CHICAGO ILLINOIS 60613

TITLE
8 SCHEMATIC, 2830 DMM ANALYZING

UNLESS OTHERWISE INDICATED	DRAWN BY	DATE	SCALE
1. ALL DIMENSIONS ARE IN INCHES	HPC	3/16/78	
2. ALL BENDS ARE 90°	CHECKED	APPROVED	SIZE / MODEL
3. TOLERANCES	G. Post	[illegible]	A 2810
FRACTIONS ± .xx			
DECIMAL ± .xxx			
HOLES ± .xxx			
ANGLES ± 0° 30'			
DO NOT SCALE DRAWING	SHEET 1 OF 1		

496	174	9	008

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